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W OF INSTITUTION

55TH CONGRESS, 3d Session. } SENATE. { DOCUMENT No. 31.

PROCEEDINGS

OF THE

FIFTEENTH MEETING

OF THE

Convention of American Instructors of the Deaf,

HELD AT

THE OHIO INSTITUTION FOR THE DEAF AND DUMB,

COLUMBUS, OHIO,

JULY 28-AUGUST 2, 1898.

DECEMBER 12, 1898.—Referred to the Committee on Education and Labor and ordered to be printed.

WASHINGTON:
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1899.

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SEP 28. 1900

ACT OF INCORPORATION.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Edward M. Gallaudet, of Washington, in the District of Columbia; Francis D. Clarke, of Flint, in the State of Michigan; S. Tefft Walker, of Jacksonville, in the State of Illinois; James L. Smith, of Faribault, in the State of Minnesota; Sarah Fuller, of Boston, in the State of Massachusetts; David C. Dudley, of Colorado Springs, in the State of Colorado, and John R. Dobyns, of Jackson, in the State of Mississippi, officers and members of the Convention of American Instructors of the Deaf, and their associates and successors be, and they are hereby, incorporated and made a body politic and corporate in the District of Columbia by the name of the "Convention of American Instructors of the Deaf," for the promotion of the education of the deaf on the broadest, most advanced, and practical lines; and by that name it may sue and be sued, plead and be impleaded, in any court of law or equity, and may have and use a common seal and change the same at pleasure.

SEC. 2. That the said corporation shall have the power to take and hold personal estate and such real estate as shall be necessary and proper for the promotion of the educational and benevolent purposes of said corporation, which shall not be divided among the members of the corporation, but shall descend to their successors for the promotion of the objects aforesaid.

SEC. 3. That said corporation shall have a constitution and regulations or by-laws, and shall have power to amend the same at pleasure: *Provided,* That such constitution and regulations or by-laws do not conflict with the laws of the United States or of any State.

SEC. 4. That said association may hold its meetings in such places as said incorporators shall determine, and shall report to Congress, through the president of the Columbia Institution for the Deaf and Dumb, at Washington, District of Columbia, such portions of its proceedings and transactions as its officers shall deem to be of general public interest and value concerning the education of the deaf.

Approved, January 26, 1897.

LETTER OF SUBMITTAL.

THE COLUMBIA INSTITUTION
FOR THE DEAF AND DUMB,
Kendall Green, Washington, D. C., December 12, 1898.

To the Congress of the United States:

In accordance with the act of incorporation of the Convention of American Instructors of the Deaf, approved January 26, 1897, I have the honor to submit to Congress the proceedings of the fifteenth meeting of the convention, held at Columbus, Ohio, July 28–August 2, 1898.

I have the honor to be, very respectfully, your obedient servant,

EDWARD M. GALLAUDET,
President.

Hon. GARRET A. HOBART,
President of the Senate.

Hon. THOMAS B. REED,
Speaker of the House.

FIFTEEN NDENTS.

OFFICERS OF THE CONVENTION OF AMERICAN INSTRUCTORS OF THE DEAF, 1898-1901.

President.—DR. E. M. GALLAUDET, Washington, D. C., President of the Columbia Institution for the Deaf and Dumb.

Vice-President.—R. MATHISON, Belleville, Ontario, Superintendent of the Institution for the Deaf, Belleville, Ontario.

Secretary.—J. R. DOBYNS, Jackson, Miss., Superintendent of the Mississippi Institution for the Education of the Deaf and Dumb.

Treasurer.—J. L. SMITH, Faribault, Minn., Instructor in the Minnesota School for the Deaf.

DIRECTORS.

WILLIAM K. ARGO, Colorado Springs, Colo., Instructor in the Colorado School for the Deaf and the Blind.

MISS SARAH FULLER, Boston, Principal of the Horace Mann School for the Deaf.

ROBERT PATTERSON, Columbus, Ohio, Principal of the Ohio Institution for the Education of the Deaf and Dumb.

CHAIRMEN OF COMMITTEES.

For the Normal Section:

W. A. CALDWELL, Berkeley, Cal., Instructor in the California Institution for the Education of the Deaf and Dumb and the Blind.

For the Oral Section:

DR. JOSEPH C. GORDON, Jacksonville, Ill., Superintendent of the Illinois Institution for the Education of the Deaf and Dumb.

For the Kindergarten Section:

MISS MARY MCCOWEN, Englewood, Ill., Supervising Principal of the Chicago Public Day Schools for the Deaf.

For the Auricular Section:

ENOCH HENRY CURRIER, New York, Principal of the New York Institution for the Instruction of the Deaf and Dumb.

For the Art Section:

ERNEST ZELL, Columbus, Ohio, Instructor in the Ohio Institution for the Education of the Deaf and Dumb.

For the Industrial Section:

WARREN ROBINSON, Delavan, Wis., Instructor in the Wisconsin School for the Deaf.

Western Local Committee:

F. W. METCALF, Ogden, Utah, Superintendent of the Utah State School for the Deaf and Dumb.

Southern Local Committee:

W. O. CONNOR, Cave Spring, Ga., Principal of the Georgia School for the Deaf.

Eastern Local Committee:

EDWARD B. NELSON, Rome, N. Y., Principal of the Central New York Institution for Deaf-Mutes.

OFFICERS OF THE CONVENTION, 1895–1898.

President.—DR. E. M. GALLAUDET, Washington, D. C., President of the Columbia Institution for the Deaf and Dumb.

Vice-President.—FRANCIS D. CLARKE, Flint, Mich., Superintendent of the Michigan School for the Deaf.

Secretary.—S. T. WALKER, Jacksonville, Ill., Superintendent of the Illinois Institution for the Education of the Deaf and Dumb.

Treasurer.—J. L. SMITH, Faribault, Minn., Instructor in the Minnesota School for the Deaf.

Directors.—

D. C. DUDLEY, Colorado Springs, Colo., Superintendent of the Colorado School for the Deaf and the Blind.

J. R. DOBYNS, Jackson, Miss., Superintendent of the Mississippi Institution for the Education of the Deaf and Dumb.

MISS SARAH FULLER, Boston, Principal of the Horace Mann School for the Deaf.

LIST OF MEMBERS.

Archer, T. V., Indianapolis, Ind.
Argo, W. K., Colorado Springs, Colo.
Argo, Mrs. W. K., Danville, Ky.
Atwood, R. H., Columbus, Ohio.
Balis, J. C., Belleville, Ontario.
Balis, Sylvia Chapin, Belleville, Ontario.
Ballard, Melville, Washington, D. C.
Bancroft, Mary, Columbus, Ohio.
Bangs, D. F., Devils Lake, N. Dak.
Bell, Minnie O., Fulton, Mo.
Bending, E. J., Delavan, Wis.
Berg, Albert, Indianapolis, Ind.
Billings, Carrie E., Flint, Mich.
Bledsoe, J. F., Baltimore, Md.
Blount, W. J., Danville, Ky.
Boggs, Irene, Columbus, Ohio.
Bolyn, Mrs. Margaret I., Council Bluffs, Iowa.
Bones, Mary J., Austin, Tex.
Booth, F. W., Mount Airy, Philadelphia, Pa.
Bowles, W. A., Staunton, Va.
Brabyn, Minnie, Flint, Mich.
Bright, Helen E., Fulton, Mo.
Bright, S. C., Fulton, Mo.
Brown, T. L., Flint, Mich.
Buckingham, Abigail, Flint, Mich.
Burke, Sister Mary Anne, Buffalo, N. Y.
Burt, W. N., Edgewood Park, Pa.
Caldwell, W. A., Berkeley, Cal.
Campbell, W. J., Belleville, Ontario.
Carter, W. H., Danville, Ky.
Chapin, E. L., Romney, W. Va.
Charles, C. W., Columbus, Ohio.
Clarke, F. D., Flint, Mich.
Clarke, T. P., Flint, Mich.
Clarke, Mrs. T. P., Flint, Mich.
Cloud, Rev. J. H., St. Louis, Mo.
Collett, Annie, Fulton, Mo.
Connor, Jessie C., Cave Spring, Ga.
Connor, W. O., Cave Spring, Ga.
Crane, J. E., Hartford, Conn.
Crawford, Ellen E. J., Flint, Mich.
Crawford, L. May, Little Rock, Ark.
Crouter, A. L. E., Mount Airy, Philadelphia, Pa.
Currier, E. H., New York.
Davidson, S. G., Mount Airy, Philadelphia, Pa.
Day, H. E., Danville, Ky.
De Motte, Linda E., Flint, Mich.
De Motte, W. H., Indianapolis, Ind.
D'Estrella, Theophilus, Berkeley, Cal.
Doane, Letitia L., Columbus, Ohio.
Dobyns, J. R., Jackson, Miss.
Dold, J. J., Olathe, Kans.
Donald, Dora, Manchester, Iowa.
Donnally, H. H., Faribault, Minn.
Dositheus, Sister Mary, Buffalo, N.Y.
Draper, A. G., Washington, D. C.
Drury, Mrs. Martha E., Flint, Mich.
Dudley, D. C., Colorado Springs, Colo.
Dwyer, Miss B. E., Buffalo, N. Y.
Edgar, Bessie M., Columbus, Ohio.
Elwood, Caroline F., Washington, D. C.
Ely, C. R., Washington, D. C.
Ely, C. W., Frederick, Md.
Ely, Grace D., Frederick, Md.
Euritt, G. D., Staunton, Va.
Fay, A. B., Washington, D. C.
Fay, E. A., Washington, D. C.
Fay, G. O., Hartford, Conn.
Fish, Kate H., Washington, D. C.
Fox, T. F., Station M, New York.
Freeman, S. M., Cave Spring, Ga.
Fuller, Sarah, Boston, Mass.
Gale, E. P., Frederick, Md.

Gallagher, J. E., Chicago, Ill.
Gallaudet, E. M., Washington, D. C.
Gaw, A. C., Faribault, Minn.
Gilbert, S. W., Little Rock, Ark.
Goodwin, E. McK., Morganton, N. C.
Gordon, Ellen, Washington, D. C.
Gordon, J. C., Jacksonville, Ill.
Gordon, Mary T. G., Washington, D. C.
Gregory, S. W., Delavan, Wis.
Green, Lettie C., Danville, Ky.
Greener, A. B., Columbus, Ohio.
Greener, May, Columbus, Ohio.
Griffin, Mary E., Faribault, Minn.
Grimes, Mary, Columbus, Ohio.
Griswold, Mary E., Chicago, Ill.
Gross, Henry, Fulton, Mo.
Hall, Percival, Washington, D. C.
Haupt, Hermine, Danville, Ky.
Hays, A. D., Romney, W. Va.
Hecker, C. M., Indianapolis, Ind.
Hecker, E. J., Indianapolis, Ind.
Heizer, Eva, Indianapolis, Ind
Herdman, Pearl, St. Louis, Mo.
Hill, C. H., Fulton, Mo.
Hofsteater, H. McP., Morganton, N.C.
Hubbard, Willis, Flint, Mich.
Hunter, Bessie, Columbus, Ohio.
Hurd, Mrs. Anna G., Morganton, N.C.
Israel, Ellen J., Olathe, Kans.
Jenkins, Weston, Trenton, N. J.
Johnson, J. H., Talladega, Ala.
Johnson, R. O., Indianapolis, Ind.
Johnson, W. S., Talladega, Ala.
Johnston, Effie, Jacksonville, Ill.
Jones, Mrs. Cora, Columbus, Ohio.
Jones, J. W., Columbus, Ohio.
Jones, Nellie, Fulton, Mo.
Jones, Susie E., Edgewood Park, Pa.
Kearny, Alfred, Jackson, Miss.
Keller, Margaret Hopkins, Romney, W. Va.
Kellogg, Jane B., Hartford, Conn.
Kenney, Elsie L., Columbus, Ohio.
Kiesel, T. A., Washington, D. C.
Kinsell, Lida, Columbus, Ohio.
Kinsley, Ida B., Indianapolis, Ind.
Knight, Emma F., Flint, Mich.
Kouns, Mary N., Fulton, Mo.
Larson, L. M., Santa Fe, N. Mex.
Lea, Ida, Little Rock, Ark.
Leggett, Virginia E., Columbus, Ohio.
Len, Barbara, Columbus, Ohio.
Le Prince, Gabriella, Station M, New York.
Linn, Georgina, Belleville, Ontario.
Long, Hinda M., Flint, Mich.
Long, M. T., Danville, Ky.
Long, Mrs. M. T., Danville, Ky.
Long, Margaret A., Columbus, Ohio.
Long, Nora V., Indianapolis, Ind.
Loughhead, Grace R., Flint, Mich.
Mansur, Mrs. Lida O'H., Columbus, Ohio.
Mashburn, A. G., Little Rock, Ark.
Mathison, R., Belleville, Ontario.
McAloney, T. S., Talladega, Ala.
McClure, George M., Danville, Ky.
McCowen, Mary, Englewood, Ill.
McDermid, D. W., Winnipeg, Manitoba.
McGregor, R. P., Columbus, Ohio.
McKee, N. B., Fulton, Mo.
McKillop, D. J., Belleville, Ontario.
Metcalf, F. W., Ogden, Utah.
Miller, J. C., Morganton, N. C.
Mitchell, H. F., Lexington avenue, New York.
Moffat, L., Berkeley, Cal.
Morse, Anna, Jacksonville, Ill.
Moses, Delia L., Knoxville, Tenn.
Moses, T. L., Knoxville, Tenn.
Moylan, D. E., Baltimore, Md.
Nelson, E. B., Rome, N. Y.
Nichols, Arline, St. Louis, Mo.
Nichols, Emma C., Danville, Ky.
Odebrecht, Leonce A., Columbus, Ohio.
O'Hara, Eliza E., Columbus, Ohio.
Patterson, Robert, Columbus, Ohio.
Philip of Jesus, Sister, Montreal, Quebec.
Piper, Mark H., Flint, Mich.
Pollard, Nannie A., Faribault, Minn.
Putnam, George H., Olathe, Kans.
Ray, J. E., Raleigh, N. C.
Read, jr., Frank, Jacksonville, Ill.
Read, jr., Mrs. Frank, Jacksonville, Ill.
Read, Utten E., Indianapolis, Ind.
Rider, E. C., Malone, N. Y.

Robinson, Lucy, Indianapolis, Ind.
Robinson, Warren, Delavan, Wis.
Rogers, Mrs. Annie, Danville, Ky.
Rogers, Augustus, Danville, Ky.
Roper, Annie, St. Louis, Mo.
Rothert, H. W., Council Bluffs, Iowa.
Rucker, J. T., Romney, W. Va.
Saunders, Adah, Jackson, Miss.
Schory, A. H., Columbus, Ohio.
Scott, Clara, Flint, Mich.
Seaton, C. D., Devil's Lake, N. Dak.
Sheridan, Thomas, Faribault, Minn.
Sites, Katherine F., Columbus, Ohio.
Smith, Alice Noyes, Faribault, Minn.
Smith, J. L., Faribault, Minn.
Snider, Annie E., Faribault, Minn.
Spruit, Conrad, Council Bluffs, Iowa.
Stauffer, D. E., Baltimore, Md.
Steelman, Anna B., Columbus, Ohio.
Stelzig, Lulu, Columbus, Ohio.
Steinke, Agnes, Delavan, Wis.
Steward, J. M., Columbus, Ohio.
Stewart, A. A., Olathe, Kans.
Stewart, J. M., Flint, Mich.
Strouse, Kate A., Little Rock, Ark.
Struckmeyer, Miss A. F., Delavan, Wis.
Swan, E. F., Flint, Mich.
Sweet, Caroline C., Hartford, Conn.
Swiler, J. W., Delavan, Wis.
Talbot, Benjamin, Columbus, Ohio.
Tanner, Annie E., Jacksonville, Ill.
Tate, J. N., Faribault, Minn.
Teegarden, George M., Edgewood Park, Pa.
Tillinghast, E. S., Boulder, Mont.
Tillinghast, J. A., Belfast, Ireland.
Tyrrell, Marion E., Flint, Mich.
Vail, S. J., Indianapolis, Ind.
Walker, Frances B., Columbus, Ohio.
Walker, H. E., Cedarspring, S. C.
Walker, N. F., Cedarspring, S. C.
Walton, Idella, Jacksonville, Ill.
Weeks, W. H., Hartford, Conn.
Wettstein, Frances, Milwaukee, Wis.
Wharton, Lula E., Jackson, Miss.
Wilkins, Blanche H., Austin, Tex.
Wilkinson, Warring, Berkeley, Cal.
Williams, Job, Hartford, Conn.
Wing, Laura C., Rome, N. Y.
Wood, A. F., Talladega, Ala.
Wood, S. Frances, Jacksonville, Ill.
Wood, V. Louise, Jacksonville, Ill.
Yates, Frank B., Little Rock, Ark.
Young, Minnie B., Columbus, Ohio.
Zell, Mrs. Ella A., Columbus, Ohio.
Zell, Ernest, Columbus, Ohio.
Zorn, William H., Columbus, Ohio.

HONORARY MEMBERS.

W. H. Addison, Glasgow, Scotland.
Mrs. R. H. Atwood, Columbus, Ohio.
Hon. L. D. Bonebrake, Columbus, Ohio.
Stephen R. Clark, Columbus, Ohio.
Miss Beatrice Condon, Ealing, London, England.
Rev. W. S. Eagleson, Columbus, Ohio.
T. C. Forester, Belfast, Ireland.
Dr. P. G. Gillett, Jacksonville, Ill.
Miss L. B. Gipson, Upper Sandusky, Ohio.
Hon. Wm. A. Gipson, Upper Sandusky, Ohio.
Hon. G. W. Glover, Cadiz, Ohio.
Mrs. A. B. Greener, Columbus, Ohio.
Miss Mary E. Grow, Pomeroy, Ohio.
George W. Halse, Columbus, Ohio.
Hon. George Hamilton, East Liverpool, Ohio.
Hon. Charles E. Haugh, Indianapolis, Ind.
G. S. Haycock, Glasgow, Scotland.
Hon. G. A. Joiner, Alabama.
Rev. J. M. Koehler, Philadelphia, Pa.
Rev. A. W. Mann, Gambier, Ohio.
Hon. William L. McElroy, Mount Vernon, Ohio.
Mrs. R. P. McGregor, Columbus, Ohio.
Dr. J. L. Noyes, Faribault, Minn.
Mrs. L. A. Odebrecht, Columbus, Ohio.
Alex. L. Pach, Easton, Pa.

Mrs. Robert Patterson, Columbus, Ohio.
Dr. Isaac Lewis Peet, New York.
Amasa Pratt, Columbus, Ohio.
Mrs. A. H. Schory, Columbus, Ohio.
Hon. J. W. Sifton, Manitoba.
Mrs. James M. Steward, Columbus, Ohio.
Mrs. B. Talbot, Columbus, Ohio.
J. A. Tillinghast, Belfast, Ireland.
Rev. Job Turner, Staunton, Va.
W. Wade, Oakmont, Pa.
S. T. Walker, Chicago, Ill.
Rev. O. J. Whildin, Baltimore, Md.
Rev. C. L. Zorbaugh, Cleveland, Ohio.

SUMMARY.

	Active.	Honorary.	Total.		Active.	Honorary.	Total.
Alabama	4	1	5	Montana	1	.....	1
Arkansas	6	.....	6	New Jersey	1	.....	1
California	4	.....	4	New Mexico	1	.....	1
Colorado	2	.....	2	New York	10	1	11
Connecticut	6	.....	6	North Carolina	5	.....	5
District of Columbia	12	.....	12	North Dakota	2	.....	2
England	.....	1	1	Ohio	33	21	54
Georgia	3	.....	3	Ontario	6	.....	6
Illinois	12	2	14	Pennsylvania	6	2	8
Indiana	12	1	13	Quebec	1	.....	1
Iowa	4	.....	4	Scotland	.....	2	2
Ireland	1	2	3	South Carolina	2	.....	2
Kansas	4	.....	4	Tennessee	2	.....	2
Kentucky	12	.....	12	Texas	2	.....	2
Manitoba	1	1	2	Utah	1	.....	1
Maryland	6	1	7	Virginia	2	1	3
Massachusetts	1	.....	1	West Virginia	4	.....	4
Michigan	19	.....	19	Wisconsin	7	.....	7
Minnesota	9	1	10	Total	221	38	a 258
Missouri	13	.....	13				
Mississippi	4	.....	4				

a One counted twice.

PROCEEDINGS OF THE MEETING.

PROCEEDINGS OF THE MEETING.

FIRST DAY.

THURSDAY, *July 28.*

The Fifteenth meeting of the Convention of the American Instructors of the Deaf was called to order in the chapel of the Ohio Institution for the Deaf and Dumb, Columbus, Ohio, at 3 p. m. on July 28, 1898, by Superintendent J. W. Jones, who spoke as follows:

ADDRESS OF SUPERINTENDENT J. W. JONES.

Ladies and Gentlemen, Members of the Convention of American Instructors of the Deaf, and Friends: It gives me great pleasure upon this occasion to call this convention to order. It is an honor which I did not expect to enjoy, and especially I did not expect such an honor while I am so young in my professional life. I am perhaps somewhat of a novice to appear before this American association of educators. I have only been in the work for a short time. From the various remarks that I read in the newspapers at the time of my appointment I did not expect to last very long. An Indiana paper, in commenting upon the appointment, said that they had a new superintendent over in Ohio by the name of Jones, and then added that his successor had not yet been announced. [Laughter.] It is a matter of gratification to me and a matter of great pride that the stone which the builders would have rejected has become, for this moment only, the head of the corner. [Applause.] I am sure the members of this convention have been made to feel already that they are welcome, and anything I may say could not add to that feeling. You know it is said that the "proof of the pudding is in the eating," and I am sure that the attention that we have tried to give you yesterday and to-day is a sufficient guaranty that you are welcome here. It might not be inappropriate to say that we had

something else in view, nor even to say that we had some selfish motives, when we invited you to come to Columbus. We felt that we needed you. We felt that we needed that inspiration that would come from this large audience of educators, dedicated to the great work in which we are engaged. We felt that our mingling with you would help us and inspire our teachers. We felt that it would stimulate all of us to do better work for the children who are sent to us to be trained for their life's work. This was one of the reasons that prompted us to extend to you an invitation to meet here. It was not, however, from entirely selfish motives, for we had understood that your convention was held here twenty years ago, and we felt that it would be a great pleasure, at least to the older members of the association, to come back to Ohio and reacquaint themselves with the old scenes. It might not be out of place to say something also in regard to the moving and controlling spirit in the management of this institution. I am sure that the profession looked upon us with some suspicion, and I have no doubt they had a right to.

It takes a superintendent but a short time to understand that he can succeed on only one basis, and that is, that he must remove everything that hinders the educational progress of the institution and every pernicious influence that attaches itself to institutions of this kind. I decided, therefore, early in the administration that, so far as my influence and voice might go, these influences should never appear in the Ohio institution. It was with some apprehension on the part of my friends that we undertook this policy. I had a talk in regard to this matter with the chief executive of the State and with the board of trustees, and I found them ready and anxious to carry out this policy. This has been the controlling spirit of this institution in the past, and I pledge you that it shall be the spirit that will control it in its future relations to the pupils and the teachers. I find that the children have enjoyed that kind of an administration. The teachers of the institution, feeling that continuance in position depended upon good work, have felt safer in the performance of their duties, and the parents and friends of the institution have supported and approved this kind of work. I am also glad to say that the legislature has done what they could to further the interests of the education for the deaf. It gives me great pleasure to know that the people of the United States and the people

of Great Britain and the people of Canada are all working along the same lines and for the same ends. I do not care to add anything more to what I have said, except to repeat again that you are welcome. Friends from the sister States, friends from Canada, friends from Great Britain, friends from whatsoever country you may come, I welcome you here. You will find no rules to curtail your pleasure. I have instructed the night watchman to suspend the rules for retiring while you are here. What is ours is yours. "Yours to have and yours to enjoy." I hope you will feel at home with us this week and enjoy your visit.

I do not want you to become so happy in this liberty, however, that you will forget to attend the sessions of the convention. I am sure that you will not do this. We were to have had the mayor of the city deliver an address of welcome on behalf of the city, but I just received a telephone from him saying that it would be impossible for him to be present. I am sorry to say also that Governor Bushnell is sick, and not able to attend to the duties of his office. He is away from the State for his health, and I am sure that he is as much disappointed in not meeting you as you are in not seeing him. I received a letter from him which he desires me to read to this convention.

THE HOMESTEAD,
Hot Springs, Bath County, Va., July 27, 1898.

MY DEAR PROFESSOR JONES: I wish to assure you, and through you, the National Convention of the Educators of the Deaf and Dumb, of my sincere regret that absence from the State will prevent my attendance during the sessions of your convention and deprive me of the privilege of saying a few words of welcome to so notable a gathering of men and women, who have devoted their lives to the grand object of imparting the inestimable benefit of education to an afflicted class. During my official connection with your institution you have had the opportunity of observing how thoroughly I am in sympathy with its objects and how greatly I appreciate the work that is being done in each school year. I need not assure you that this interest I have felt in the Ohio branch of the work extends to all institutions for the education of the deaf and dumb, and that I am a most ardent advocate of every extension and of every means to bring about still more valuable results in this field of endeavor. The labors of the educators of the deaf and dumb do not fail to meet with appreciation from the world. Of that there can be no doubt, and it is a most agreeable fact that the great progress made each year testifies to public sympathy and to steadfast support. It is my earnest hope that every good end sought to be accomplished by those who have developed the present admirable system of education for the deaf

and dumb may meet with the greatest success. Wonders have been performed already, and there is every reason to think that still greater rewards are possible in the future. I trust that you will offer to the members of the convention my most cordial wishes for an entirely pleasant and profitable sojourn in the capital city of Ohio. Had it been possible, I would have taken sincere pleasure in extending a welcome by word of mouth, but since that honor has been denied me I must ask you to assure your guests that they are most welcome and that the people of Ohio are happy in having such an assemblage at its capital city and at an institution which is so much a source of Ohio pride.

Again wishing the convention all success in its work, I have the honor to remain,

Very respectfully, yours, ASA S. BUSHNELL,
Governor of Ohio.

Prof. J. W. JONES,
Superintendent Ohio Institution for the Education of the Deaf and Dumb, Columbus, Ohio.

Although we do not have the governor with us to welcome us on behalf of the State, we have with us this afternoon the lieutenant-governor, and I take great pleasure in introducing to you Lieutenant-Governor Jones.

ADDRESS OF LIEUTENANT-GOVERNOR JONES.

Mr. Chairman, Ladies and Gentlemen: Someone asked me a little while ago if I had a prepared speech for this occasion, and I said, "No;" and then he asked me, "Why not?" and I said, "Because I was not able to prepare one upon a two hours' invitation." I appear before you to talk a few moments from the heart, and not from something that I had thought out and prepared beforehand. I tried to listen to Superintendent Jones while he was speaking, but my attention was so much attracted to the person over here [referring to the interpreter] that I did not hear what he said, and I may say the same things that he did. [Laughter.] It gives me the very greatest pleasure to meet with you this afternoon. I am more than pleased to meet with so many distinguished individuals, not only from our own country, but from countries so far removed from us. I regret that this representation had not gone further and embraced all the people of the world who are engaged in this work, and I am sure that they would have been warmly welcomed by the people of the Buckeye State, and have been splendidly entertained during their stay with us. While I am pleased to meet with so many distinguished ladies and gentlemen from all parts of the world, I join with

Superintendent Jones in the regret that Governor Bushnell has to forego the pleasure of greeting you on this occasion. I know that his heart is here with you to-day. I know that he feels that if he were here to-day, and could speak to you, it would do his soul good. I am not going to address you and tell you how magnanimous or interesting is the work in which you are engaged, neither am I going to make any suggestions as to the proper method of doing your work. It seems to me that if I should attempt this it would be a little like a lad advising his grandfather as to what he should do. While I do know something of the hard work required in this institution, and the care required to carry forward your work, I do not know anything about the sign language. I know something about the finances of this institution, but I do not know how in the world you commence to teach the little boy or girl who comes to you. I know something about teaching in a general way, but I can not conceive how you begin to teach the child that can not hear a word, and carry on the work until he can talk and carry on a conversation. I can not see how you can teach such children the rudiments of the English language, and, therefore, I shall not undertake to talk upon that subject. There are a few things that I might say, and there is one thing that I want to say, and that is that I am glad to know that this great world is being improved every day we live in it. I know that back in the history of the past it had been a problem, even with great minds, as to what we ought to do with the unfortunates. I know something, too, about the various theories that were advanced with reference to the insane, and I know, too, that these theories would do honor to the most barbarous countries under the sun.

I thank God that we have laid aside these ideas, and that we are building up the people, and that we are advancing in all grades and conditions of humanity. I recall now, looking backward over the history of this State and speaking generally on the subject of teaching, I can remember when we had no public schools except on private subscriptions among the neighbors. I remember on the last day of school the teacher said he would work out the pay rate on the blackboard. Then a little later on we had so much public-school money, and after that was taught out the parents subscribed to keep the school going, and the result of this was that the boys and girls who needed the education most got the least. By this plan only

those who were fortunate enough to have parents who appreciated the advantage of school received any education at all. After a time the Buckeye State demanded something better. They demanded that the public should take the public schools into their care and make them free to all. They have demanded since that time that education not only should be free, but that it should be compulsory. This is true, at least, in Ohio and some other States, and, as a result, to-day we are raising, for our public schools and our different charitable institutions in this State, the annual sum of $4,000,000.

I think this is the grandest money the State is expending. I think it is the grandest taxes that any State can levy. This money is being expended for the education of our youth, the fortunate as well as the unfortunate, and we are building them up and making of them grand men and women. I want to say that just in the same proportion as the United States and England and Scotland and Canada are advancing upon these subjects in the education of their people, they have raised the standard of manhood and civilization in this world. Sometimes I hear it said by a pessimist—and I told you I am going to talk from my heart—that the world is getting worse. I do not believe it. The world is getting better. I believe the religion we have now is better than the religion we had fifty years ago. When I was a lad I was a good boy and went to Sunday school, but the pastor of the church on the side of the road where I went to Sunday school and church was decidedly against the pastor on the other side of the road. Now our pastors come together and talk together and love one another and the work in which they are engaged. Thank God, we have the kind of religion that is doing good work. As in the church so in everything else—we are getting together. In this same spirit you are coming together to discuss the best plans of work.

I like this spirit. Sometimes we get off in a corner and become very selfish. Sometimes in my profession I might have thought that I understood the whole law, but when I get into the State convention and hear other men talk I begin to find out that I did not know it all. I begin to find out that some of my ideas can be improved by exchange of ideas with others. I think these fraternal relations are the grandest relations in the world. The world is getting better. We are reaching a higher stage of civilization, and it is growing out of these associations. We are having even a better fraternal

spirit in our political parties, and we are finding out that, after all, John is a good fellow, although he does not belong to our political faith. You should meet in your institutions frequently. You should make the world better. Perhaps I should not have said these things, but I have the honor to-day to speak to one of the grand conventions of teachers. Fifty years ago a good teacher was not much of anybody. He did not have much to do, but in this day of teachers the teachers are controlling this country. Even the farmer is asking something of the teacher, that he may learn something with reference to farming and that he may farm more scientifically. In fact, nearly all the classes of men ask something of the teacher with reference to their business. We are carrying the science of education into every department of life. Just in the ratio that the teachers have been ascending in this country civilization has gone to a higher plane. What I would like to see would be a little fairer compensation for the teacher. [Applause.] As I said awhile ago, I think this is a grand convention of teachers, and it seems to me that you, of all the teachers in the world, have the most difficult task to perform. It seems to me that you must have the highest degree of capability, the patience of Job, and the industry of the honeybee, to accomplish the grand results you have brought about. [Applause.] Almost every man in Ohio who got to be a lawyer commenced life by teaching a district school. I was one of them myself, and I used to think it was hard work, but the work you are doing for this country is a grand one, and it is bringing honor upon the State. I can not talk any longer upon this subject, but I wished to show you that we thank you for the honor of this visit. It will do our teachers good and it will do us all good. I do not speak for the class we call unfortunate, but for all classes, and as we care for them so we are raising the general civilization all over the country. I say again, we thank you for this visit, and in the name of the State of Ohio I bid you welcome. I turn you over to Superintendent Jones and his assistants, and assure you that you may trust yourselves in his care. They will take good care of you, and I hope you will enjoy yourselves and come again. I thank you for you attention and bid you welcome to our midst.

Superintendent J. W. Jones then introduced the president of the association, Dr. E. M. Gallaudet, of Washington, D. C.,

who responded to the addresses of welcome in behalf of the association. He spoke as follows:

ADDRESS OF DR. E. M. GALLAUDET.

Your Excellency, Superintendent Jones, and Members of the Convention of the American Association of Instructors for the Deaf: I esteem it a very high privilege, indeed, to be allowed to speak for this convention, in response to the warm words of welcome we have just heard. I am sure that we, who have met many times in convention, the American instructors of the deaf, appreciate the hospitality and the kindness that has always been extended to us in the different places in which we have held our meetings. We know, too, how much the entertainment of this convention means to you. We know how much effort it requires on your part to entertain and care for us. We know, too, how much self-sacrifice and labor it involves on the part of the officers of the institution and the assistants, as well as of all who are employed in the institution, to entertain a great body of men and women in convention. We know that our presence among you means to you anxiety and labor and weariness, and we appreciate all that.

You have assured us of your welcome and we do not doubt in the least your sincerity. I speak for all the members of this convention when I say that we thank you for this kind welcome and for the entertainment that you so kindly offer to us here in Ohio. Ohio has a noble way of doing things. I remember that during our civil war, Ohio gave to us and to this country three of our greatest generals. I remember also that Ohio has given to us during the history of this country three Presidents whom we have honored in Washington and throughout this country. I am reminded also that during our present exciting times in this country, the President whose hand is on the helm, he who guides the ship of state and in whom we have the highest confidence and whose discretion and sound judgment we trust will guide us safely, that you, too, have given him to us and to this country. [Applause.] And then again in regard to the matter of conventions, your good superintendent, Mr. Jones, has said that there was a convention of this association held in this State twenty years ago. While that is true, I must also remind him that there was another meeting of this association held in this State forty years ago. So that in the matter of conventions it would seem that Ohio

has been doing this, as she has been doing many other things, by threes.

This is our fifteenth meeting, and it is the third meeting that has been held in the State of Ohio. You have, therefore, entertained the American Association of Instructors for the Deaf three times, or one-fifth of the time, and I am very sure that we all are, and ought to be, indebted to the State of Ohio for her hospitality and for her kindness to this association. This meeting is of a peculiar interest to all of us. In the first place, this association is now, for the first time in its history, a fully organized body. It is for the first time a fully legalized organization. Since our last convention an act of incorporation has been passed by Congress and we are now fully authorized to inherit money, to become rich, and to do many other things which a corporation may do and which we can do under the new form that we have taken on since our last meeting.

I am sure that you will not expect me to make a long speech this afternoon. I do not think it is necessary. I think when you have said the good old Saxon words of welcome, and when we have responded to that welcome with good open hearts, that is enough. We have with us this afternoon many distinguished representatives, not only from our own country but from other countries, and I am sure that you would like to listen to them, and that they would be equally glad to respond to your words of welcome.

We have with us Superintendent Clarke, of Michigan, who knows what it is to entertain a convention, and who is a whole host in himself. He speaks from the standpoint of experience for he knows all about it. I take great pleasure in introducing Superintendent Clarke, of Michigan.

ADDRESS OF SUPERINTENDENT F. D. CLARKE, MICHIGAN.

Mr. Chairman and Fellow-Teachers: There are times when we can talk because we feel that much speech comes without difficulty. Some three years ago, in a convention similar to this, I welcomed you to the Michigan school, and I felt then more than I could say; but now, in responding to the welcome extended to us by his excellency and by Superintendent Jones, I feel a great deal more than I can possibly say. There are some things of which the poet has said "distance lends enchantment to the view," but I assure you, however, as a near neighbor of the State of Ohio, that this State is strong with a

near view, and the more closely you view it the more you will love it. If there is a State in the Union which we of Michigan look upon with honor, respect, and affection, it is the State of Ohio. If there is any people whom we love more than we love the people of other States, it is those who call themselves Ohioans. Many of the good things which we enjoy in Michigan came to us from Ohio. We are, in fact, rather inclined to look upon Ohio as the mother of our State. This school, as many of you know, is much older than our school in Michigan.

The first superintendent of the Michigan school, if I remember rightly, was a teacher in the Ohio school and came to Michigan. You see from this that so far as I am concerned I feel almost as if instead of responding to an address of welcome I should welcome you here, because I am a grandson of this State by adoption.

I think the present time is preeminently the age of conventions and meetings. We have them of all sorts and classes, and the man or woman who has not been to a convention of some kind somewhere would be very hard to find. Of all the conventions, however, I do not think there is one of them that does so much good as a convention of teachers of the deaf. Every year our teachers have their State and town meetings. Every year our teachers have a day in each public school, in which the school is closed and the teachers go off to visit other schools. I never go to their meetings but that I think what a ready means it is of exchanging opinions which they possess.

I never read in the paper that next Thursday the schools will be closed, as the teachers are going to Lansing to visit the schools, that I do not wish the teachers of deaf could enjoy the same privilege. I imagine that in the whole audience there are very few teachers, especially young teachers, who have enjoyed the privilege of visiting another school for the deaf while at work.

This convention is the only means we have of exchanging ideas. Years ago, when I began to teach in New York, I was vain and I thought that almost everything necessary to be known was known in the New York institution. I admitted, of course, that there might be something to be taught at Hartford, but when it came to the rest of the country I thought not. In the course of time I went to one of the conventions. I found teachers in attendance at this convention who knew more than I thought could be possible outside of my institution. I sup-

pose I was rather a callow youth who needed to keep silent and learn.

Every teacher who comes here, when he goes home will feel that the work in which we are engaged shall be more appreciated than ever. The teaching of the deaf is hard work and it requires a great deal of patience. It is hard work that brings its own reward. No teachers in the world can say they are doing as satisfactory work as we do. In Michigan, and I am prepared to give the figures, we have sent out 1,141 pupils; and, after diligent inquiry, I find that there are only three who are not self-supporting, and of these three two of them have other afflictions besides deafness. There has never been a pupil of the Michigan school in the State prison, and there has never been one convicted of felony. A few boys have been fined for assault and battery, but that is the worst crime, so far as I know, in which they have been engaged. Unfortunately, it is true that many of them will walk on the railroad, but it brings its own punishment swiftly and surely.

This afternoon we are beginning our convention, and I wish to impress upon this convention the words of Superintendent Jones, that while we have time for social intercourse we are here to work and to improve ourselves, so that when we go home we may feel that the hours and the minutes which we have spent in this convention have been a glorious privilege. I am sure that you will all join with me in expressing our thanks to Superintendent Jones for the privilege of meeting here.

I am sure that Superintendent Jones himself will excuse me if I say that when I first met him at Milwaukee I had about the same impression of him that the gentleman from Indiana had. [Laughter.] I thought that he had been appointed for political reasons. I thought that his qualifications were mostly political, and I expected to see him come to Milwaukee to have a good time. I was most agreeably surprised. I know of no one there who was more earnest in his endeavor to profit by all that was there. I know of no one who endured the intense heat better and worked harder to make that meeting a success. On further acquaintance with him, I found that since he was appointed superintendent of this school he has devoted days and nights of hard work to the mastering of those problems which confront us all, and that he has made himself thoroughly familiar with the peculiar language of the deaf. I find that he has diligently studied all those questions that have perplexed

us for years, and I can say frankly that no man in this convention is prouder to call him friend than I am. I want to say that there is no man whose opinions I value more highly than I value his opinions. There is no man in my opinion more worthy of the position which he fills than he is, and I hope and trust that for many years to come he will honor this institution by presiding over it. [Prolonged applause.] I am sure that you will all join with me in extending to the good people of Ohio our heartiest thanks for the kind words of welcome and the warm reception they have tendered to us this afternoon, and I am sure that their kind words and generous reception will inspire us to do earnest work throughout our sessions.

The president then called on Superintendent Matthison, who addressed the convention as follows:

ADDRESS OF SUPERINTENDENT MATHISON.

Mr. Chairman, Ladies and Gentlemen, and Christian Friends: After listening to the speeches that have been delivered this afternoon by Lieutenant-Governor Jones, of Ohio, and Superintendent Jones, of the Ohio Institution for the Deaf, it made me feel very proud that I had a little interest, too, in this State. I did not recall the fact that I had that interest until I heard their speeches, and then I remembered that I had an uncle who lived in Ohio during the war, and that this same uncle had patriotically fought, bled, and died for Ohio. [Applause.]

I do not think he was any the worse for it, my friends, because he had to die anyway, and he could not have died in a nobler State or a nobler cause. [Laughter and applause.]

I can assure you that I appreciate to the fullest extent this warm welcome we have received here this afternoon.

I appreciate the honor of responding, on behalf of the delegates from Canada, to this very cordial welcome, and I promise you that we shall take advantage of every opportunity to enjoy the hospitalities which you have so kindly offered to us. I am asked by your president this afternoon to respond to the toast, "Canada." As you all know, Canada—fair Canada—is the brightest gem in Great Britain's crown.

I do love a man who is patriotic and who is proud of his country, and I am proud of my country. [Applause.] From what I have heard and read for the past few months of your country, and the manner in which you have squelched those

Spaniards, and humbled their pride, I think you have many reasons to be proud of your country. If I were an American, I would be very proud of this country, and I am proud of you anyway. [Applause.]

A Southern lady writing in one of the magazines lately, said that when she heard the word Canada it made her shiver, and that she thought it was a jambing-up place somewhere between Buffalo and the North Pole.

She thought of it as a peculiar icicle world where every heart was made and incased in a refrigerator. [Applause.] She has lived in Canada for several years, and she has changed her mind very much in regard to that country. She has come to the conclusion, after living with us for several years, that Canada is God's own country, where the very air is conducive to good common sense and moral courage. She thinks of it now as a country where poverty and plenty may be more thoroughly enjoyed and more generally imbibed than can be properly digested. [Laughter.]

Dr. Gallaudet told me yesterday that he expected me to respond in behalf of Canada this afternoon, and as the inspector of our institution is not here yet I consented to say a few words.

I have attended former conventions of this association, and at the one held at Jackson you will remember that I was somewhat of a novice in the work. You will remember that I had only been in the profession for three years. I was looked upon as an ignoramus, and I assure you that I met with a very warm reception. I told the convention at that time that I was going to stay right with you, and I have done it.

You come here from various parts of the country to attend this convention. We bring with us our little trials of everyday experience, get hints and suggestions from other teachers, and we go home invigorated and refreshed because of being here. The work of this convention is very helpful to us, and we are better prepared to pursue our duties in the coming year. The attendance at this convention is an inspiration to everyone who will give attention to the various papers and topics presented at this meeting, and we go back feeling that many of those questions which have perplexed us in the past have been removed by an exchange of ideas with our fellow-teachers.

By referring to the statistics I find that in the United States you have 95 institutions, 1,188 teachers, and 11,427 pupils. In

Canada we have 7 institutions, 126 teachers, and 820 pupils. I just want to say that we over in Canada are heart and soul with you in this work. I need not say anything here about methods, but I believe we are all desirous of doing the greatest possible good to the greatest possible number.

The superintendents who are here, as well as the teachers, have great responsibilities. If we are to succeed in doing our work and being successful in our plans of carrying forward the work, we must watch and strive and pray. If the blessings of Heaven do not rest upon our efforts, then our efforts will not be successful. It is the individual work of each one in an institution that when taken together makes the work a success. The superintendent has his duties and his responsibilities, and each teacher has his share in the work, and it is the combined work of both that brings success to the school.

I will tell you a story that illustrates what I mean. In our institution we have a trumpeter, and that trumpeter, as supervisor of a class of boys, is charged with the duty of seeing that the boys say their prayers every night before going to bed. It so happened that one day, after the boys had been to a ball match and had come home tired, they all went to bed without saying their prayers. This boy made every one of them get up and say his prayers, and after he had done this he got into bed without saying his own prayers. He was reported to me and I said to him, "Did you not know that it was wrong?" He said, "I was tired and thought that I had done enough and should be excused."

That is just the position that some of us fall into by thinking that when we have arranged for the convention we should let it go on while we spend our time in looking over the assembly or about the institution. I am impressed with the fact this afternoon that some of the familiar faces who used to be with us are not with us to-day. I can recall Dr. Peet and Dr. Gillett and Dr. Noyes. Some of these are in enforced retirement, and I think you will agree with me that we should send them the greetings of the convention and wish them a prosperous and happy old age. I am sure that they are with us in spirit this afternoon if not in person. We have some of the old guard left, and I know that you will join with me in wishing that the old guard may be with us for many years to come.

I am glad to say that the programme outlined for this convention will be both entertaining and instructive. We shall

have learned papers and animated discussions. I am sure, also, that the social part of this convention will not be overlooked. I was young myself once, and I do not ever want to be more than 49; and I remember the little corners in the institutions where we used to meet for social chats. Marriages, it is said, are made in heaven, but I am reliably informed that the preliminary arrangements are often commenced at the institutions. [Laughter.]

If you will pardon me I want to tell you another story. There were twin deaf girls at our institution for seven years. They looked so nearly alike that I could not tell them apart. These girls were continually getting mixed up, and sometimes when we punished one of them the other took her place. One of the boys of our institution fell in love with one of the girls, but he did not know which one. He met her in the corners of the institution, but the other sister managed to have her sent upstairs and took her place. The young man could not tell the difference, and the other sister reported her to me. I said to her, "Did you not think that it was wrong to meet this young man under the circumstances?" She said, "I did think so, but I was a little late in thinking about it, and I will do better the next time." [Laughter.]

Then I said, "What did the young man do?" And she said, "He took hold of my hand and kissed me." And then I said, "What did you do?" And she said, "Well, I did not do anything; I was patient." [Laughter.]

I was impressed with what Superintendent Clarke said in regard to the success of our pupils who have gone out from our institution. Last summer I wrote to all of my old pupils, and I received letters from them breathing the spirit of love for all those who had helped them while at the institution. I have already taken up too much of your time, and I must hasten. You have a great country, and it has grown much greater since that little fracas in Boston Harbor. You have seventy millions of people and we have only six millions, but we are growing, and expect to grow faster in the future. Although we are small in numbers now, we are proud of the Empire upon which the sun never sets, and which is presided over by the good Queen Victoria, the wisest and best ruler that ever sat upon a throne. [Great applause.] She is a good woman in every respect, and honored and revered by every nation under the sun.

The British Empire is three times the size of Europe, and has treble the population of Russia. Its extent is 11,000,000 square miles, and it has 691 times the area of the United Kingdom. It occupies one-fifth of the globe, and contains one-fifth of the human race, or 350,000,000 people. This is our country. Her army is large, and her navy—well, it is very much better than that of Spain. [Laughter.] Your people are our people, and we are one. We are one in thought, and we are one in aspirations. We are the only people who understand what civil and religious liberty means. In your present difficulties you have our British sympathies against the cruelties of Spain. [Applause.] There is a tide of good feeling running between the two countries and uniting them. In a few days there will be a commission of business men to settle all the little disturbances that may exist between the United States and Canada. I know that it is your hope that it will be successful, and I am sure that we hope that all these petty differences may be satisfactorily adjusted. There is nothing that ought to stand in the way of our becoming a united people. Then we can stand shoulder to shoulder in the cause of truth and justice and deaf-mute education. [Applause.]

We are friends, and we should ever be friends. We are imbued with the same spirit and we are working for the same ends. Our friendship should be united in an Anglo-Saxon alliance that would be supreme in peace and invincible in war. [Applause.]

I now thank you again for the welcome, and hope that this meeting will be as successful as those in the past have been. In behalf of the delegates from Canada, I promise the governor and Superintendent Jones that we shall take advantage of all the courtesies extended to us.

The president introduced Superintendent W. H. Addison, of Glasgow, Scotland, saying that the convention was broad enough and liberal enough to embrace the whole world, and expressing great pleasure at the presence of a representative from Great Britain.

ADDRESS OF SUPERINTENDENT W. H. ADDISON, OF GLASGOW.

Mr. Addison spoke as follows:

Your Excellency, Superintendent Jones, Mr. President, and Fellow Teachers: Although I am no orator, as Brutus is, yet I take great pleasure in appearing before you to say a few words

and to thank you for the very cordial welcome that you have extended to me in this country. I esteem it a very great honor, indeed, to be permitted to address a convention of American teachers of the deaf assembled in this great and grand State of Ohio.

In coming to this large and splendid country, I feel that I have not come to a foreign one. Things, indeed, to some extent, seem a little strange, but there is a strong familiarity about the scenery and about the dwellings and about the people; so much so that I can hardly realize that the broad Atlantic divides me from my home.

We in Great Britain have many things in common with you people of America. In the first place we have our common language, which I am glad to say is being extended and also being improved by many expressions which are being coined on this side of the Atlantic. These expressions have been brought about in order to express new thoughts, new desires, and new wants which your civilization requires. Then, again, we have our common literature. To begin with, we have the Bible, that grandest book of all books, handed down to us from England, and then we have that greatest of all poets, Shakespeare. These are gifts which England has given not only to this nation, but to English-speaking people everywhere. I think that these two gifts will never perish while the English race exists. Then, again, we have our common love of liberty. A great many people think that when you cut yourselves adrift from our country that you were inflicting a great blow upon us, but it seemed that that revolution of yours, which seemed to strike such a heavy blow, has proved a great blessing to the democracy of Great Britain. It seemed that the liberty for which you aspired and which you achieved inspired the common people of England and Scotland to strive for larger liberty at home. We have also a common sturdy independence. Our Anglo-Saxon forefathers, who were wise and trusted not only in Providence but in a strong right arm to make a path through the world, were the same.

It has been said by one of our greatest thinkers that the great ruling force that moves the world is an idea, and that ideas rule and govern the world. That I believe to be true. I have shown you that we have many ideas in common with you. Recent events seem to show and to prove that the two great nations of the English-speaking race are drawing

closer together. Such is the prayer of every true Briton and every true American who loves his country. [Applause.] But there is a special cause and a special idea which draws us who are teachers of the deaf together, and that of course is the education of the deaf. The great cause of the education of the deaf is advancing in common with the great cause of education in general, by leaps and by bounds. I want to say for Scotland that it was always a great country for education. Scotchmen are proud to say that Scotland provides the brains for the British Empire. I was very much surprised to find that Scotland also provides brains for the Ohio institution. [Laughter.] But we in England have long looked to America as our example in the education of the deaf. There is no doubt in the minds of those who know the facts that America is in advance of us, but at the same time we are not going to sleep. In coming over here I was talking to some Americans coming from our country, and some of them thought that we were asleep.

We have a law that every child in Great Britain between the ages of 6 and 17 shall go to the proper school, and there is no excuse for staying away. It is my strong belief that the teacher makes the school. I do not care what kind of fine places you may have. I am told sometimes to see what fine buildings you have here and what accommodations you have for carrying on the work. But it is not fine buildings; it is the teacher who makes the school, and upon whom will depend the character of the pupil.

I have heard since I have been here that there is a tendency in America to cut down salaries. I think that is a mistake which we are not making. In the past our salaries have been miserable, but there is a satisfactory improvement from year to year, and we hope to be on a par with what you do in this country for the deaf.

We teachers in Great Britain three years ago formed an association much in the same way that you are banded together. We meet annually for the transaction of the necessary business pertaining to the association, and every two years we hold, what is called on the other side of the water, a congress, at which papers bearing on the general subject of education are presented and discussed. Our first congress was held at Glasgow, and we were greatly honored by the presence of several American ladies and gentlemen, teachers and clergy-

men, among whom was our esteemed president, Dr. Gallaudet. The attendance of these ladies and gentlemen at our meeting was esteemed by us very much, and when the invitation came from your executive committee for us to come over here, I determined to come if possible. Our annual meeting was held last week and at that meeting the following resolution was adopted, and I was appointed to bear it to the American association of teachers of the deaf. I will read it to you:

THE NATIONAL ASSOCIATION OF TEACHERS OF THE DEAF.

Greeting to the American Teachers of the Deaf:

This annual general meeting of The National Association of Teachers of the Deaf of Great Britain and Ireland, assembled in London, July 9, 1898, desires to forward a hearty greeting to the Convention of American Instructors of the Deaf, about to be held at Columbus, Ohio, U. S. A.

It was with feelings of great satisfaction that we received the message of fraternal greeting sent by the American teachers of the deaf to the British teachers, and which was so ably presented by Dr. E. M. Gallaudet at our conference at Glasgow last year.

On that occasion the interest and value of our proceedings were materially enhanced by the presence of several American colleagues, and we are pleased to know that we British teachers will have the honor to be represented at your convention.

We trust that the convention may be highly successful, and that it may still further advance the cause of deaf education, which has already reached such a degree of excellence among you.

Finally, we desire to express to every American teacher the heartiest good will, and the hope that you may long prosper in the work to which you are so devoted.

Signed on behalf of the National Association of Teachers of the Deaf of Great Britain and Ireland:

RICHARD ELLIOTT, *Chairman.*
EDW'D TOWNSEND, *Vice-Chairman.*
W. S. BESSANT,
FRED'K A. DRISCOL,
Honorable Secretaries.

The president next called upon Dr. Warring Wilkinson to respond to the greeting of Ohio in behalf of the Pacific coast.

ADDRESS OF DR. WILKINSON.

Mr. Chairman, Ladies and Gentlemen, and Fellow-Workers: The weather was very warm when I arrived here, but it became much warmer when I was told that I would be expected to make a speech this afternoon. The meeting of many old friends since my arrival and the forming of new acquaintances is not conducive to speechmaking. It is not often that I

regret my choice of profession, but this afternoon I have a feeling akin to regret that I was not bred to the pulpit or the bar or some talking profession, in order that I might have the facility of expression which should enable me to speak to you in a manner that would be worthy of the occasion.

It gives me great pleasure, indeed, to be with you. On the whole I am glad that I have not been bred to one of the professions to which I have just referred, for if I had been in all probability I should not have had the opportunity to make these friendships, which have been the joy of my life. I am quite content that it is as it is. I would rather have my poor speech with your friendship than to speak with the tongues of angels and lack your friendship. I have come thousands of miles to attend this convention. I bring my greetings and the greetings of the people whom I represent. You have their sympathy in your work.

At one time it was doubtful whether I should bear these messages to you. I have had a hard year, and have had to endure much physical pain. I thought for my own benefit I ought to go to the mountains fishing, and the thought of it was very attractive to me, but, as the time approached, I could not bring myself to think of not seeing you. I wanted to see and talk with those who are growing gray in the service. I wanted to see and to press the hand of those who are beginning the work, and upon whose shoulders it must soon rest. It seemed strange to me to hear the allusions to our venerable friends and the old guard. In some respects I may be called one of the old guard. I have been forty-one years in this work. I do not consider that I am old. In some respects, at least, I am not old in feeling. If you had seen me shinning up a tree or getting my line in the water, you would not think so. My illness caused me some misery, but I have recovered from it. In some respects I do feel old, but it is the infirmities of life. In some respects I feel like an old Abbot. In that respect I do feel my years. I wish I had forty years more to throw my energies into this work. It is a work that I love. I have thrown all my energies into it in the past and shall continue to throw all my energies into it in the future. Upon the younger members of the profession I want to urge that you increase your interest in the work. I am sure that you will feel how much there is to do and how little there has been done.

I do not know that I have said anything as yet in response to the words of welcome which we have heard this afternoon. I know that Superintendent Jones expresses the sentiments of Ohio when he assures us of the welcome of his State, and I know that he is glad that we are here. I had the pleasure of entertaining this convention in California once, and I lay awake for two weeks to find out how to entertain and to devise ways in which I might entertain them better. I am sure that the entertainment of this convention brings to you many responsibilities and worries, but you will enjoy having it here. I trust that the convention will be the greatest of all our conventions and that it will be a great benefit to the great work in which we are engaged. I hope and trust that nothing will occur during our sessions that will mar that peace and harmony that has always existed among us and that has always characterized our conventions.

From my door on the Pacific slope I can look out and see the ships carrying the soldiers to war. Our country has taken up the sword in defense of justice and humanity, and we feel proud of it; yet it is pleasant to retreat from these present notes of war and come here to organize another campaign, a campaign against ignorance and prejudice. If we do our duty as good soldiers, we may feel, with the poet, that "Peace hath her victories no less renowned than war."

I thank you again for these words of welcome, and trust that we shall have a pleasant as well as a profitable session of this convention.

The president then introduced Dr. E. E. White, ex-Commissioner of Education of Ohio, who addressed the convention as follows:

ADDRESS OF DR. E. E. WHITE, EX-COMMISSIONER OF EDUCATION.

Mr. President and Friends: I have not the good fortune to represent the State of Ohio officially on this occasion, but in the deeper sense, in which I represent all of the States as one who has devoted his life to the improvement of the schools of this State. I saw the light from a window cut in the primeval forest, and I have seen the State come up until she is honored throughout the world. But the progress which most gladdens my heart has been the progress which has been made by the children of this State and this institution. I was seated on this platform when this building was dedicated in

1863. We were not so fortunate on that occasion as to have the lieutenant-governor, but we had the pleasure of listening to the Hon. Samuel Galloway in such a speech as he only could make. So on this platform on that memorable night he dedicated this building to this great work. For fifteen years I resided in this city, and I had a very close relation with this institution.

I recall this afternoon with great sadness, as well as great joy, the three men that stood at the head of this institution during that fifteen years. The first of these was Collins Stone, of blessed memory; and then came Superintendent Weed, and he was followed by Dr. Fay. All three of them were men of great reputation in the education of the deaf, and they advanced this institution. In 1876 I left Ohio to take charge of a university in another State. If I remember rightly, I think this institution then ranked second only to Hartford. This was the judgment of men generally, and I was proud of this fact. During the fifteen years I was away from the State of Ohio I was saddened to learn that the political parties were looking upon such institutions as a part of the party rewards, and as each party had its little reign there came a change in the superintendency of these institutions. When I returned to Ohio, I found these two noble institutions discouraged and not in the healthy condition they were in 1876.

The politician had done his work in these institutions. The result of it was that they were weakened in power, for no man can learn the art of teaching deaf children in a year. It is difficult to teach children with all their faculties, but when you come to teach a child with one window of the soul closed you have still greater difficulty. It is almost the same as if you had another race of beings to instruct. I am in hope that the best men in all the political parties have agreed that these great institutions of ours shall not be crippled in any way by changes for political reasons.

When I moved back into the State of Ohio in 1892, I went to the governor and I said, I plead for the deaf children and for the blind children of the State of Ohio, and that the only thing that should be considered in the conduct of these institutions should be the good of these children, and that no other question had any right to consideration. I was glad to find that the governor was in full accord with this idea. I have the hope and I have the confidence that the men that manage

these institutions will remain firm in the discharge of their duty. If either political party shall put its hand on either of these institutions, I have a voice and I will use it and speak out for these institutions. I have devoted now the best part of forty years to the improvement of American education, and while I was superintendent of schools I believe I was officially related to the schools for the deaf and the blind. I used my official position to encourage and improve these institutions.

From that day to this I have watched the progress of these schools. I tell you no secret when I say that in no department of education has there been greater progress made than in the education of the deaf and the blind children.

I believe that this progress is hopeful, and that we shall bring to these children something which will in a measure at least compensate them for their loss and by which they shall get something that will be of benefit to them. The child is not for the school, but the school is for the child. Method is not to be imposed upon the child, but the method is to be derived from a knowledge of the child in order that the child may come into the gift of knowledge and power.

We aim at least to make the soul of these children equal to the souls of those children who have no such defect. We believe that the teachers in these institutions are making rapid strides in preparing these children for higher usefulness in the world.

The superintendents have protested against these institutions being called asylums, and they have dropped the idea that these institutions are charities. We have learned, at least, that every child that is born into our liberty has a right to education, and standing by the cradle of the child are three agents, joining to form a triple alliance, to help that child into manhood and power.

These three agents are the family, the community, and the State into which he is to take citizenship. The property of the State, every dollar of it, is under mortgage, and under first mortgage, too, for the education of every child born into this liberty. This is true, because the State is vitally interested in the outcome of that child's life. The State is not interested in the education of that child as a charity, but it has a self-interest, an obligation, and a duty.

That child has a right to ask the State for an education, not as a charity, but as a birthright which it inherited when it was

born into the world. We hear so much said in this day and age about human rights and about the rights of labor and the rights of capital, but how little we hear about the one fundamental right, which is the conservator of all other rights.

The right of childhood is the conservator of every other right in this world. When our Savior would teach the world a great lesson, he took a little child and set him in the midst of them and said, "Except ye become as this little one, ye can not enter the kingdom of heaven." This was an object lesson, not only in Christianity but in civilization. In the center of our civilization is a little child.

Take wise and loving care of that little child, for by that care all human interests are secured. Neglect that little child, and by such neglect all human interests are placed in jeopardy.

The deaf children stand in this relation, with rights as sacred, obligations as binding upon the State and the community, and with interests as vital as the hearing children.

The State of Ohio recognizes the right of all children to have an education, however born into this liberty. So the educators of the deaf and the blind are truly, then, but the teachers of the public schools, upon whose success depends the public good and safety and glory of this country. As we see that every child that comes to manhood is prepared to meet the obligations of citizenship, to that extent we make the liberty of this country secure and perpetual.

I thank you for this kind invitation to be with you on this occasion. I have been away since June, teaching teachers, and I am home for a short stay only. I want to say that we appreciate your efforts, and bid you godspeed in the work in which you are engaged.

Dr. Gordon then announced the meetings of the different committees, after which the convention adjourned till 9 o'clock Friday morning.

SECOND DAY.

FRIDAY, *July 29.*

MORNING SESSION.

The meeting was called to order at twenty minutes past 9 by the President.

After the doxology prayer was offered both in the sign language and orally by the Rev. Dr. De Motte.

Mr. Dobyns moved the appointment of Mr. Odebrecht, of Ohio, and Mr. Hall, of Washington, as assistant secretaries. The motion was seconded and carried. The roll of members was then read by the treasurer, Mr. J. L. Smith. The president made a few remarks, setting forth the conditions of membership in the convention, both active and honorary, and urging all teachers and active workers in the education of the deaf to join.

At the request of the president, the secretary read the following letters from absent members and from those unable to accept the invitation to be present:

ILLINOIS GENERAL AGENCY,
CONNECTICUT MUTUAL LIFE INSURANCE COMPANY,
July 26, 1898.

MY DEAR SIR: I wish you would say to my former colaborers that "circumstances over which I have not sufficient control" are alone responsible for my not being able to meet with you and them.

This is the first time in nearly twenty-five years I can not claim membership in the convention of American Instructors of the Deaf. It seems strange indeed to think that I am not to-day speeding away to Columbus, but the Fates have otherwise decreed.

My "first convention" was held at Columbus, and I believe I have attended every one since that time, as well as several conferences of superintendents and principals, and the first convention of articulation teachers, held at the Lexington avenue (New York) school. If I had my desires completely met, I would to-day be with you all, as of yore. But as that is not to be, I beg the privilege of this poor manner of representation, and, for the moment, of reverting your minds to my humble self. Allow me also to express the hope that the convention this year (as it certainly has been in the past) will be fraught with all that is good and encouraging in the work that is dearest to so many noble lives.

Trusting that I can say, certainly, "auf Wiedersehen," I am,

Cordially yours,

S. T. WALKER.

DR. EDWARD M. GALLAUDET,
President American Instructors of the Deaf,
In Convention at Columbus, Ohio.

MONUMENT BEACH, MASS., *July 26, 1898.*

MY DEAR DR. GALLAUDET: I thank you very much for your kind note, and regret to write that I must lose all the meetings arranged for this summer.

My sister is gaining in strength, but needing my presence.

With every good wish for the convention,

I am, sincerely yours, SARAH FULLER.

OMAHA, NEBR., *July 25, 1898.*

MY DEAR SIR: I regret that I can not be with you at the convention. I expected to go up till this morning, but I find that business matters over which I have no control or choice render it imperative that I shall remain in Omaha this week. I hope you will have a pleasant and successful meeting. I know you will. I shall think of the good people I have met in the convention for the last quarter of a century with the deepest feelings of regard and love. We have had a convention of the educators in the trans-Mississippi region, and I had the pleasure of arranging a programme on behalf of the deaf and blind. I hope we were able to do the cause some good.

Hoping that you may have an excellent meeting, and regretting my inability to be with you, I am, sincerely yours,

J. A. GILLESPIE.

Dr. E. M. GALLAUDET,
President, Columbus, Ohio.

BERKELEY, *July —, 1898.*

DEAR FRIENDS IN COUNCIL: The frontispiece of Mark Twain's latest volume of travels portrays the genial humorist as sitting solitary by the taffrail, gazing abstractedly out over the "vasty deep," while below runs the legend, "Be good, and you will be lonesome." Whether Mr. Clemens presents this sentiment to the confiding public for what it is worth as a sample of "Puddin' head" wisdom self-applied, or intends it as a bluff to humanity at large struggling toward things higher, we are left to surmise. An absentee through force of circumstances from your deliberations, the undersigned, while confessing to a sense of "aloneness," has not even the assurance of our taffrail philosopher that, on the principle that it is a poor rule which does not work both ways, being "lonesome" he is therefore "good;" for he feels he would be better with you amid the familiar surroundings of the Ohio Institution, which, while "lost to sight," are still "to memory dear." That your proceedings may be harmonious and your discussions fruitful of benefit to the profession in general is his earnest hope. Teaching as we do in special lines, and left, as in many cases we are, to our own devices as individual instructors, we need, however excellent our methods, to keep in touch with each other and with the rank and file of educators about us. Such being our attitude, let our teaching have for its prime object and highest aim the restoration to society, as far as we may, of those whom misfortune tends to isolate. Assured then of the sympathy and cooperation of every lover of humanity in this our chosen work, the dictum of "Mark" must, in our case at least, stand disproved, and being "good" we need not be "lonesome."

Lest I seem however to threaten you with a "paper" in the guise of a greeting, I sign myself,

Fraternally yours, CHARLES STRONG PERRY.

HARTFORD, CONN., *July 27, 1898.*

MY DEAR SIR: Circumstances which I can not control, and which I very much regret, render it impossible for me to attend the coming convention of instructors at the Ohio Institution. The week's sojourn in the house would revive memories innumerable and priceless. Every echo would call up scenes and events intimately connected with the history of the Ohio Institution.

Wishing you a pleasant, prosperous, and profitable session,

Sincerely yours,

G. O. FAY

J. W. JONES, *Superintendent.*

MARYLAND SCHOOL FOR THE DEAF,
Frederick, Md., July 27, 1898.

DEAR SIR: I regret very much that I can not be present at the convention which assembles this week at the institution over which you preside. I regret the loss of this opportunity to meet old friends and colaborers, and to engage with them in the consideration of those questions which we have so much at heart.

I regret my absence the more in view of my delightful recollections of the Ohio Institution and of the people of Columbus when I was on the teaching staff of the school.

Please give my hearty greeting to the members of the convention, and my best wishes for the success of the meeting.

Yours very truly, CHAS. W. ELY.

Mr. J. W. JONES,
Superintendent Ohio Institution for the Deaf and Dumb.

LETTER FROM THE MEXICAN MINISTER.

ATLANTIC CITY, N. J., *July 13, 1898.*

DEAR SIR: Referring to your esteemed letter of the 11th of last April and to my answer of the following day, both relating to the invitation made to the instructors of the deaf in Mexico to attend the Fifteenth Annual Convention of American Instructors of the Deaf, to meet at Columbus, Ohio, on the 28th instant, I regret to inform you that I have received an official communication from my Government stating that, owing to the fact that the number of professors at the institution for the deaf and dumb at the City of Mexico is very limited, and that no one can be spared at present without great inconvenience to the institution, none of such instructors can attend the convention, a fact which they very much regret, as they fully recognize the importance of said meeting and the many advantages that will result therefrom.

I am, sir, very truly yours,

M. ROMERO.

Dr. E. M. GALLAUDET,
President Columbia Institution for the Deaf and Dumb,
Kendall Green, Washington, D C.

VICTORIA ROAD, MARGATE, *July 13, 1898.*

DEAR DR. GALLAUDET: I am writing to express my great regret at being unable to meet you at the convention in Ohio this year, as I hoped I should have been able to do. At the end of a long and exhausting session a trip across the sea and a mingling with your enthusiastic workers in our cause must have been both physically and mentally exhilarating, and I should have much enjoyed it, but circumstances are still against me.

I can only hope that your meetings will be as useful to the work of deaf-mute instruction as I am sure they will be pleasant to those who participate in them. At the present time, when we seem more and more to realize that we all belong to the common stock of the great English-speaking race, the feeling of national brotherhood, now so strongly felt in identical, or nearly identical, ideas in religion, liberty, politics, and philanthropic work, should link us in common action for the advancement of the work to which we teachers in America and Britain have devoted our lives. Your example has, more than anything else, stimulated us in this old country to endeavor to reach a high and satisfactory point in the education of our deaf.

With kindest regards, I am, yours very truly,

RICHARD ELLIOTT.

Dr. GORDON. I want to say in connection with these letters of regret, that I desire to express the regrets of Dr. Gillett. We all know he would have been here if possible. He is in feeble health, and it was utterly impossible for him to be present. He sent his best wishes for the success of the convention, and his personal regards to his old friends. I see him almost every day. He is exceedingly feeble, but he is constantly attended by that great solace which carries so many men through the difficulties and hardships of life. He sends his loving regrets to you all.

Dr. WILKINSON. I also bring the greetings of Dr. Peet. As you all know, he has been identified with the instruction of the deaf from his youth; in fact, almost from the beginning of the New York Institution. He regrets exceedingly that he can not be here, and I think, Mr. President, it would be a gracious and proper act for this convention to express in some way their sentiments in regard to the nonattendance of Drs. Peet, and Gillett, and Noyes.

Mr. TATE. Mr. President, I want to say a word in regard to Dr. Noyes. I wish to inform you that I have the honor to bring you his greetings, and to say that his life is a happy one. He takes a great interest in the welfare of the school.

He visits us occasionally, and I know no man in honoring whom this convention would honor themselves more than they would in honoring Dr. Noyes. I want these greetings sent.

Mr. CONNOR. Mr. President, I desire and think it proper that we have a resolution in the form of a letter to this old guard, expressing to them our best wishes for their future welfare. I am sure that such a letter would be highly appreciated by them, and I am sure we owe it to them in recognition of their past services.

Mr. F. D. CLARKE. I want to say a word in regard to these letters of regret and the resolutions of response. One of these gentlemen is my father in our profession, and I know that a telegram sent to him would bring a feeling of joy and gladness to his heart. Therefore I second the motion with the amendment that it be a telegram instead of a letter.

The amendment was accepted.

Dr. FAY. Mr. President, I suggest that the name of Samuel Porter be added to this list to whom we send congratulations. Professor Porter is 88 years of age, but he is still deeply interested in the cause of the education of the deaf and the work in which this convention is engaged. He was not able to attend this convention, but I know he would be pleased to be remembered by us.

Dr. GALLAUDET. I want to speak of the letter addressed to the chairman of the section from Mr. Dudley, of Colorado. He is not one of our oldest members, but he writes in this letter that he can not be here on account of ill health. It might be proper to include his name with that of the four members already suggested by you.

Dr. Latham's name was also added, and following still another suggestion, it was finally voted to send this telegram from the president and secretary to the above-named gentlemen:

The American instructors of the deaf, assembled in the fifteenth meeting of the convention, beg to tender their regrets at your inability to take part in their proceedings, and to express the hope that you may abundantly enjoy the blessings of Him who works all things together for good to them that love God.

E. M. GALLAUDET, *President.*
J. R. DOBYNS, *Secretary.*

Mr. CONNOR. I want to say a word in regard to the speaking. I think these teachers become so accustomed to speaking in an undertone that they do not realize the size of this hall. We can not hear them here. I suggest they raise their voices even at the risk of deafening somebody a little.

Mr. JONES. I desire to announce that we receive mail twice a day. Call at the office and get your mail. There are displays of exhibits of school work on each side of this building.

I hope you will all find an opportunity to look at them. There is work from the Chicago school that I know will interest you. This evening we have arranged to take you a car ride to Olentangy Park and over the city. We expect all of you to go.

Mr. Caldwell, as acting chairman of the committee on normal work, made announcements as to the programme.

Mr. Cloud moved that a committee of three be appointed by the president to select interpreters for the meetings. Carried. The chair appointed Mr. Cloud, Mr. Chapin, and Mrs. Balis.

Then followed the address of the president.

ADDRESS OF PRESIDENT GALLAUDET.

The members of the Convention of American Instructors of the Deaf are to be congratulated on the assembling of the convention for the first time as a complete legal organization.

With a history covering forty-five years of a more or less disconnected and informal existence, without charter, constitution, or permanent by-laws, the convention, at its fourteenth meeting, so called, held at Flint, Mich., in July, 1895, adopted on the 5th of that month a constitution in accordance with the terms of which it was to continue. Three days later the convention adopted a resolution authorizing the standing executive committee "to prepare and file proper articles of incorporation under the laws of any State or district as it may elect."

Considering the very broad field as to membership, which the convention was certain, ultimately, to cover, the committee concluded that incorporation by a special act of Congress would be more appropriate and desirable than by the authority of any State. Accordingly a bill approved by the committee was introduced into Congress early in the regular session of 1895–96. An account of the progress of this bill, of the valuable assistance rendered by many friends, and of its approval by the President, January 25, 1897, was published in the Annals for February of that year.

The charter so granted by Congress, a copy of which will be communicated in the annual report of the standing executive committee, contains unusually liberal provisions. No limitation is set as to the amount of property the corporation may hold nor as to the period of its existence, nor yet as to the places where its business or other meetings shall be held.

But the most important feature of the charter is the recognition by Congress of the probable value to the public of the

proceedings of the convention in the requirement made in the last section of the act that the association shall report to Congress "such portions of its proceedings and transactions as its officers shall deem to be of general public interest and value concerning the education of the deaf."

The establishment by this means of official relations between the convention and the Congress of the United States can not fail, as time goes on, to prove of great advantage to the former.

In the progress of the general work of the education of the deaf in the United States during the past three years, much occasion for satisfaction is to be found. In 1894 the estimated value of the buildings and grounds of 55 schools reported was $10,779,000. During the three years following $1,044,919 were expended on permanent improvements.

The number of schools of all classes is now 95, with 11,424 pupils in 1897, as against 82 schools with 10,027 pupils in 1894.

In 1894 there were 784 instructors employed, or one to 12.7 pupils. In 1897 there were 1,188 instructors, or one to 9.6 pupils. In 1894, 32 per cent of the teachers employed were men; in 1897, 37 per cent were men. In 1894, 4,802 pupils were taught speech, or a very small fraction under 48 per cent. In 1897, 5,498 were taught speech, or a trifle over 48 per cent.

It is worthy of notice in this connection that in November, 1894, there were in the pure oral schools of the country 869 pupils, or 9.8 per cent of the whole number, and in November, 1897, in the schools of the same class, there were 963 pupils, or 9.8 per cent of the whole number in school at that date.

It will be remembered by many that a little more than a year before the last meeting of the convention, the managers of the school for the deaf in Portland, Me., decided to abandon the oral method and adopt the combined system. The results of this change have been looked for with interest by many, and it is worthy of note that in the last number of the Annals, for June, 1898, an outside observer, resident in Portland, makes some pertinent observations which seem to justify beyond all question the wisdom of the change. Another school, originally established twenty-five years ago as an oral school, and so continued up to last year, is now reported as under the combined system. This is the German Lutheran school, in Michigan.

And in still another oral school, one of the oldest and largest in numbers, a state of affairs has been recently disclosed, the significance of which can not be misunderstood.

It is no secret that a serious loss in the number of its pupils led its managers to look carefully into the results of the method which had been followed in this school since its establishment in 1867. They also sent committees to examine other schools following methods differing from theirs, the result of all which has been the openly expressed determination on the part of prominent and influential trustees to secure a broadening of methods that shall be in harmony with a provision in the by-laws of the institution which was adopted at the organization, but has never been carried into effect. This by-law declares one of the objects of the society to be "to introduce the articulate method as practiced in Germany by the establishment of an institution based upon the eclectic system."

In several schools substantial advances have been made in the standard of scholarship their pupils may attain, evidence of which is given in thorough preparation of candidates for the freshman class of the college at Washington.

The institutions of California and Ohio deserve to be named in this connection, and to the latter especial credit is due for the establishment of a high-school department in which pupils not intending to enter college may secure more extended training than heretofore. It is to be hoped that the example set by these progressive schools may be widely followed.

The schools of our sister country, Canada, have not increased in number since 1894, nor has the number of their pupils been greatly enlarged, her 7 schools having 820 pupils in 1897 as against 807 in 1894; but the number taught speech has been enlarged from 257 in 1894 to 351 in 1897, and the number of teachers has grown from 75 in 1894, or 1 to 10.7 pupils, to 126 in 1897, or 1 to 6.5 pupils.

It is understood that the schools of the Dominion are doing excellent work in all departments.

With so many occasions for satisfaction with the condition of the education of the deaf in our country and Canada, it is a cause for the deepest regret that a policy is prevailing in the management of certain schools in the United States which is open to the severest criticism, and which, if continued, can not fail to lead to the most disastrous consequences.

In these days, when the best public sentiment is strongly arrayed against the spoils system in the public service, and

when the National Government has accepted the principle of a permanent tenure of office during good behavior in all its departments, it is hard to believe that schools for the deaf in many of our States can have been allowed to become the prey of corrupt politicians. But since this is true, with most flagrant instances occurring since the last meeting of the convention, it would be criminal neglect to allow the present meeting to pass without an earnest protest against the recurrence of the wrong. Before discussing this important subject, which is also a delicate one, for reasons which will presently appear, I wish to disclaim all personal reflections in undertaking to point out the evils of a pernicious system. For there are gentlemen here present who command my highest personal and professional esteem, the manner of whose induction into office has my unqualified condemnation. Some of these, and notably one whom I need not name, but with whom we all come into pleasant and intimate relations at this meeting, have shown ability and fitness for their work to such a degree, and have labored so assiduously to supply the lack of professional knowledge with which they entered upon their duties that we can have but one wish for them in the future, namely, that their appointment may stand as the last act of spoilsmen in connection with schools for the deaf in their respective States. And I think I do not speak inadvisedly when I say that these men would be quick to condemn, were their opinion asked, the system under which they came into their present positions.

The claim of the politicians in this matter is one of some plausibility, but its weakness can be easily shown.

They argue that for the administration of the affairs of a great establishment like a school for the deaf, the management of its finances, the purchase of its supplies, the selection of its officers and agents, the presentation of its interests to the public and to the legislature, no special training in the "art of educating the deaf" is necessary. It will be sufficient, they claim, to have a principal of the intellectual department who is skillful in the specialty, and he can direct the work of the schoolrooms.

Although in certain cases such an arrangement, under exceptionally favorable conditions, may have saved a school from disaster, and even attained a fair measure of success, I am confident no one who has had a year's experience as either superintendent or principal under these circumstances will say that the system is an ideal one. For surely a superintendent

ought to be able to judge for himself whether his teachers are competent for their work or not. He ought to be able to step into any class room and determine whether the teacher is working to the best advantage and with the best methods or not. He ought to be able to communicate freely with every pupil, to understand at first hand any complaint that may be brought to him, to settle disputes between pupils, to act often in a judicial capacity, taking his evidence directly from witnesses and culprits without the need of an interpreter. And the official head of a school ought certainly to be able to address the pupils in a body, in a manner and with a fluency and clearness equal to the style of his best teachers. He ought also to be able to speak intelligently to visitors and to the public of the methods employed in educating the children under his charge. In short, to place a man at the head of a school for the deaf who is not an experienced specialist must either degrade and belittle the profession into which he is thrust or hold him up to the just ridicule and scorn of an intelligent public as a charlatan.

More than in any previous period in the world's history is the present the age of specialists. In the law, in medicine, in mechanics, in education, in business, in the arts, the work of the world is more and more divided up and placed in hands specially drilled and guided by brains specially trained to do certain definite work. And in no line of human effort is the law of specialization more entitled to respect and observation than in the training of the deaf. A proper regard for this law ought, without any other consideration, to be sufficient to deter any State official from laying the ruthless hand of the spoilsman on a school for the deaf. But there is another reason scarcely less important why none but experienced educators of the deaf should be placed at the head of schools for their benefit.

It is not considered base for a young man to be ambitious to rise in his profession. The private soldier may hope for the day when his shoulders shall be adorned with epaulets; the young lawyer may dream of wearing the silk robe of the Supreme Court justice; the youthful rector may aspire to don the bishop's lawn; the tyro in medicine and surgery may have as his aim the conduct of a great hospital, and the fame and wealth to be derived therefrom; the young tutor may look forward to the time when a college presidency may be his, and

the humble clerk may encourage himself with the reflection that many, beginning where he is, have become railway magnates, money kings, and merchant princes.

But how is it with teachers of the deaf in States where the spoils system prevails? What inducement has a young man of spirit and ability to enter a profession in which he has nothing but the insecure position of a subordinate to look forward to? In the work of educating the deaf it is not only important that persons of more than average ability should be secured as teachers, but such persons should be retained permanently in the profession, and this certainly can not be done if the rewards to ambition common to all other professions are in this turned over to the henchmen of political bosses. Of the depressing effect of the existence of the spoils system, even in a few States, upon young men having recently entered, or being about to enter the profession of educating the deaf, I can speak from personal knowledge, for it has been my privilege for the past seven years to have somewhat to do with leading twenty-five or more educated young men to prepare themselves in the normal department of the college at Washington for the work of teaching the deaf. Often in conversation with these young men was the subject of political patronage alluded to, and it was easy to see that the profession into which they were about to enter lost favor in their eyes because of this blemish; and it is true that a number of these carefully trained young men made the teaching of the deaf nothing more than a stepping stone to some other profession, in which their natural ambition might hope for reasonable fulfillment, and the profession they relinquished was seriously the loser from their leaving it.

It is not necessary before seeking the remedy for this great evil to make more than a passing allusion to the considerations, which indeed have become household words everywhere, that may be justly urged in favor of civil-service reform in general.

None can be found in these days outside of the circle of political rings who deny the iniquity and baleful influence of the spoils system, and if this be admitted in regard to the public service generally much more strongly must its application to specialties, like the education of the deaf, be condemned. What, then, shall be the remedy and how shall it be applied? But before answering these questions it may be of interest to know just where this reform is needed, and there can certainly

be no harm in naming the States that have transgressed in this matter since the last meeting of our convention, for they are all large enough and old enough to have known better. And these are the States in which, since 1895, appointments of superintendents of institutions for the deaf have been made in the interest of the dominant political party: Ohio, Texas, Florida, Virginia, West Virginia, Nebraska, Kansas, and Illinois, the last-named State being the only one in which an experienced educator of the deaf was appointed. In the face of this dark picture of wrongdoing, it is encouraging to be able to point to a State which, having served the false gods of patronage for several years, has turned from its idols, set up an altar to the merit system, and has placed on its statute books laws that remove its schools for the deaf from the arena of politics forever. I have pleasure in naming Indiana as the State furnishing this noble example, and I venture to hope that those wayward sisters which in the past have followed the bypaths with which Indiana was once familiar will not be slow to keep step with her in the better way she has chosen. The remedies of the spoils system, as connected with schools for the deaf, are not far to seek. First, public sentiment should demand of State officials that the management of such schools should be strictly nonpartisan. Second, to insure this, legislative enactment, or, better still, constitutional provision, to this end should be secured; and along with this reform another may be mentioned for which there is need in certain quarters. It is greatly to be deplored that certain State legislatures have lately applied the screws of economy to the salaries of officers and teachers in schools for the deaf. It is hard to believe that such a measure would be demanded by the taxpayers. Certainly it would not be, could they realize how unjust it is in the first instance, and how certain it will be to degrade the dignity and diminish the efficiency of the work of educating the deaf by driving capable teachers out of it and bringing in that worst of all human agencies in any department, cheap labor.

Teachers of the deaf of the first rank of ability, and no others should ever be employed, deserve higher rates of compensation than any other teachers, for reasons that will be obvious on a very little consideration, and it is to be hoped that boards of trustees everywhere will set themselves firmly against any scheme of so-called economy which proposes to raise the revenues of the State, or to save them, by refusing

that full and even generous compensation which teachers of the deaf, always hard worked, so richly deserve.

It is with more than ordinary pleasure that I remark the presence at this meeting of several members of our profession from, I was going to say, a foreign country. But I am sure I shall speak for all my fellow-citizens before me when I say that Americans no longer regard Great Britain as a foreign nation. Her attitude of close kinship in the weeks of war now passing, her many friendly acts and words, have proved to us that the heart of Britain beats in unison with the heart of the United States. And we are not slow in grasping the outstretched hand of brotherhood extended to us from across the Atlantic. We welcome as active members in our American convention, for they are eligible as such under the constitution, our brothers from Scotland and Ireland who are with us to-day. At the proper time letters will be read from others from other countries, expressing interest in the convention and regret that they could not attend its meetings.

In this connection I will remark that there are evidences of quite an unmistakable character of a modification of methods in Europe which is likely in the near future to bring the schools for the deaf in that part of the world to the broad and liberal platform laid down in the constitution of this convention. I was made to feel this during a journey through Europe last year in ways I have already published and which need not be repeated here. This movement for reform is especially active in Germany, proof of which has come to me within a week through the courtesy of our embassy at Berlin, from the secretary of which I have received a copy of the Royal Official Journal of Berlin, of the 5th of the present month, in which an article of some length appears on "The strife between the methods of educating deaf-mutes."

From this article it is evident that the results of the pure oral method, especially in some of the larger schools, are far from satisfactory and that the suggestion of a combination or diversity of methods, to suit different capacities, is being strongly urged.

And now, ladies and gentlemen of the convention, I will not detain you longer from the work for which you have come together.

My best wishes are for a meeting that shall be helpful to each and all.

Our section committees have taken great pains to arrange a profitable programme, and I am confident we have a feast of good things before us, the enjoyment of which will make us more than ever thankful and satisfied that we belong to a noble profession; that the work to which we are devoting our lives is worthy of the best services of the best men and women.

Dr. GORDON. It may not be proper at this time to discuss the president's paper, but I am not prepared to indorse all that he said in his address. I regret that there was not a little more expression of sentiment for the progressive methods of advanced instruction. He certainly presented us a most valuable paper, but the point which I raise is the inclusion of the State of Illinois in that black list. I object to that part of the address which concerns my State and the governor of Illinois. The governor has stated that my predecessor in this institution did not resign because of political reasons, and that statement is entitled to respectful consideration. The governor has stated that it had been said that my predecessor was of the same political faith as the dominant party in Illinois.

He is entitled to that statement. When the superintendency was tendered to me, I telegraphed to him, and said that if the change was made for political reasons I would not accept it. The governor said "I am pleased with that, and I like the sentiments of that man." When the trustees were looking for a superintendent, one of the instructions they received was to obtain the best man they could find. Their choice was made, and the governor said that their choice would be entirely satisfactory to him. You all know that Illinois was slightly Republican at the last election. So you can see that it does not depend there upon the political party that may be in power. I regret to say that the sentiment in Illinois and in many other States is that these institutions may properly be filled for the benefit of the dominant party, and in pursuance of this policy quite a number would fail on this ground.

I think this matter is worthy of investigation. The more you investigate this matter the more you will like it. I think these institutions should be divorced from politics. Take the case of Iowa, where the severest blow has been dealt to our institutions, and that blow can not be charged to the spoils system. It is a case of political interference, but not upon political grounds. It is a case of managing a business of which they know nothing. It has absolutely nothing to do with the spoils system.

Mr. RUCKER. Mr. President and ladies and gentlemen, I desire to say in behalf of the State of West Virginia that the spoils system did not manifest itself in the change there.

It is altogether possible the board in West Virginia made a very serious mistake in placing me at the head of affairs in this institution. I do not question the possibility of that at all, and I have abundant evidence of the weakness of the present head of that institution. I do want to say, however, that in West Virginia our people are just as much opposed to the meddling with our schools as the people of any other State in the Union. We have minority representation in that State and the board is composed of four men who have always affiliated with the Democrats and five men who belong to the Republican party. In my election I received all the Democratic votes, every Democratic vote that was cast, and only two Republican votes. I want to tell a little more truth, and I may also say that two years before that selection was made the president of the Democratic board solicited my application.

Further, I want to say that there was a continuous resignation from July till the selection was made late in the summer; and the resignation, so far as my opinion goes, was the result of administrative difficulties and not for political reasons at all.

I admire Dr. Gallaudet's paper, but there are some things in it that might be assailed. I believe that the United States is the most liberal country in the world. I believe I can take charge of the work of an institution as well as one who has been in the work for a long time. I believe a man can adopt a plan by which he can communicate with the deaf children. I think there are numerous instances in which it can be verified. I have only been in the work for one year. I do not get up here to reply to the paper of Dr. Gallaudet, but I want to say that the governor of our State is opposed to appointments to State institutions for political reasons. The governor of the State wrote a letter asking for the retention of the present administration.

Mr. HILL. Mr. President, I rise to challenge the statement of the gentleman in what he has said in regard to the appointment for the West Virginia Institution. I rise also to challenge his statement in what he said regarding the fact that it was administrative difficulties that caused the change. There were no complications in the board or difficulties in the administration. The change was a political one and due to nothing else. There were some difficulties in the institution, but they

were not administrative difficulties and they did create certain conditions there. I saw these difficulties and I saw that I would be hampered in the discharge of my duties, and for this reason I resigned. The board accepted my resignation in July. Every Democratic member and the leading Republican members supported me, but they had a majority against me. In the meantime they had looked around and found a gentleman of their own political faith. Now this statement can not go out and be published to the world unless it is correct. I know there were certain things there that were hampering me in my management, and for this reason I sent in my resignation.

Mr. MATHISON. Ladies and gentlemen, "Let us have peace." I admire the spirit of the brother. You all know I stood in a position sixteen years ago similar to the brother here a moment ago. I was a new superintendent then, and a paper was read that riled me up pretty well, but I thought it was not all meant. I had been three years superintendent in the institution. I did not think my appointment was political at all. There seems to be a good deal of politics in these States. It is a matter of regret. I think I have had some experience. I am free to confess now, after an experience of sixteen years, it would have been a good thing to have had some experience before being put into that institution. It was the hardest work I ever undertook. I thought that really if another appointment had been made it might have been a good thing for them. Circumstances alter cases sometimes, and there were peculiar circumstances in our province. They concluded to hire a superintendent from the United States.

At first he got along pretty well, until he got acquainted with our people. It was under these circumstances that I went into the work. It was the earnest desire of my heart that these deaf and dumb children should not suffer by my appointment. I endeavored to familiarize myself with everything. I think the president and those who have visited us will say that we are doing good work. I think our institution will compare favorably with yours. I have had good teachers and good officers. I have had their salaries raised, and I would like to have them paid twice a month at the same salary they are getting now. I believe our institution is in the first rank. It is because I have been there nineteen years. [Laughter.] I hope to stay there. I had better offers at better remuneration, but I would not leave the deaf children. I do not want

to interfere with your domestic affairs, but if Superintendent Jones goes on in my footsteps he will be the best educator in this country. As I said in Jacksonville, "Some men are born great, others achieve greatness, and some have greatness thrust upon them."

This was the case with me. If they stick to the work and prove themselves worthy, you will find that they will be just as successful as any teachers.

Mr. F. D. CLARKE. You will excuse me if I say that I very much regret the course of this discussion. I can sympathize deeply with the gentleman who resigned. Six years ago, although a lifelong Republican, and I supposed everyone who knew me knew it, I was elected by a Democratic board to the superintendency of the State school in Michigan. I had taught for seventeen years in the New York institution, and I had some friends in the Philadelphia school. What was my astonishment one day to read that my appointment in Michigan was purely political. I wrote to the editor of that paper and asked him to correct it, but it was never corrected. I feel glad that circumstances have never brought me face to face with that editor.

I know that the president of this convention has no desire to make a statement that is false.

I know that if he has included a State to which his remarks do not apply he will take it from the list. I think the best way is to go to him in private and talk over this matter. I move you that we proceed with the regular programme. Carried.

Short papers on questions on the teaching of grammar were then read and discussed, all of which will be found in their proper place in the Question Box.

The meeting then adjourned till 2 o'clock.

AFTERNOON SESSION.

The afternoon session was called to order by the president at a quarter past 2. Mr. Jones announced the details of the trolley ride.

A letter from Mr. Blattner was read announcing that his absence was due to the advent of young Mr. Blattner. Mr. Swiler proposed the name of "Columbus" for the youthful discoverer.

The secretary read a telegram from the Business Men's League of Detroit, asking favorable consideration for their city as the place of the next meeting:

DETROIT, MICH., *July 28, 1898.*

F. D. CLARKE (care School for the Deaf, Columbus, Ohio):

Business Men's League sends cordial greetings to instructors of the deaf in convention assembled, and urges favorable consideration of Detroit's invitation. Please wire result at our expense.

O. A. BIERCE, *Secretary.*

By motion of Mr. Dobyns, this was referred for action to the executive committee.

Dr. Gallaudet then called Mr. Caldwell to the chair, and the work of the normal section went on. Mrs. Hurd, of North Carolina, gave an instructive exhibition of oral work with a congenitally deaf child.

LANGUAGE AND ORAL WORK WITH A CONGENITALLY DEAF CHILD.

[By Mrs. Anna C. Hurd, North Carolina.]

I have been asked to illustrate some points in speech and language teaching during the first three years, and with the aid of this little pupil I will endeavor to do so.

This child is totally and congenitally deaf. She has been in school for three years, in the oral department of the North Carolina school, at Morganton, N. C.

She is now nearly 11 years old. She is not a remarkable child in any way. She was not brought to the convention because she was the brightest pupil in her class, but because it was more convenient to bring her than any other, as she was spending the vacation at the institute.

This pupil is a member of a class of ten, eight of whom entered at the same time she did, and all are totally deaf. This child ranks seventh in the class. While I am giving you a brief sketch of our plan of work I will ask her to do some written work in order to save time. I will ask her to write a letter to someone.

In our oral department the pupils are taught by speech and speech reading and writing. Outside of the school the oral pupils mingle with the manual pupils, and, of course, learn signs. In the schoolroom signs are not used when the idea can possibly be expressed in spoken or written language so that the pupils will understand. We wish them to form the habit of speech and to depend upon it, and, more than all, we wish them to use language. This is a point I wish to emphasize—the use of language.

The progress in speech and speech reading depends largely upon the progress in language. And the use of language can be acquired only by constant practice in using it. This is one of the underlying principles of my plan of work. So far I coincide with the advocates of the natural method, and had I but one pupil, and could surround that pupil with the influence that the average hearing child has during the period of his life when he acquires the use of simple colloquial English, I would follow the natural method absolutely. But we have in our schools different conditions to meet. Instead of one pupil with father and mother, sisters, brothers, friends, all acting as teacher from the first waking hours in the morning until night, we have the problem of ten pupils and one teacher, together not to exceed five hours five days in the week. To meet these conditions a systematic course of language instruction is necessary.

The outline of language work I am following is the result of my experience with a number of primary classes. The work with each class was noted, and changes made with each succeeding class as experience dictated until the present outline was evolved. This outline consists of a judicious selection of simple words—nouns, pronouns, adjectives—verb forms, and sentence constructions, introduced one step at a time, each step leading to or preparing the way for the succeeding one.

This is an important feature. The work should not be disjointed. What we teach to-day should help us in what we teach to-morrow. All the steps are to be carefully and thoroughly taught and made the pupils' own by constant use, until when the whole is mastered the pupils will have a good command of simple English.

The utility of the words and constructions was my guide in making the selection. Observation with various classes showed me that the need for the different constructions arose at about the same period in the year, and in about the same order. Occasionally a slight transposition of the steps is necessary. It is with the first three years of this course I have to do to-day. When a class of beginners is organized a careful study of each child is made and his characteristics and deficiencies in general development noted. Special exercises of kindergarten nature are planned for the development of the faculties that appear dormant or weak in each child.

For instance, this pupil imitated very quickly and accurately, but was very deficient in reasoning faculty. One or

two other members of the class, I recall, were wholly unable to imitate. One child was very slow in all movements, another nervously jerky, etc.

I have exercised and planned and practiced with the view of correcting these faulty habits of mind and body. I consider these preliminary exercises of great value.

A class can be reduced more nearly to a unit by their employment than in any other way, and this is essential. The individuality and independence of each child should be preserved, but the pupils should all work together smoothly and uniformly if satisfactory work is to be obtained. After about ten days of this work, broken by periods of play—real play—the development of speech is attempted. But these exercises are continued during certain periods each day for several weeks. The sounds are developed in about this order: [Refers to board.]

(To be read across.)

h wh f p th t
oo a
s sh

(To be read down.)

ee	met	—b	kite
sheep	moon	boat	knife
feet	sun	boot	eye
teeth	ow	bow	ā
k	cow	tub	face
key	house	d—	z
ĭ	mouse	—d	noze
fish	mouth	bed	v
whip	ō	duck	stove
ă	hoe	sit down	r
hat	comb	dance	arm
cat	coat	g—	horse
cap		—g	barn
fat	sit	gun	bird
ŭ	come	goose	door
cup	whop	dog go	
	kiss	pit God	good-bye
shoe		egg	
	aw	ŏŏ	l
m	walk	book good	ball
muff	ŏ	foot bad	girl
thumb	top	oi	doll
n	hop	boy	bell
fan	ĕ	ū	x
pan	pen	how do you do?	box
man	hen	ī	
pin	b—	pipe	

As soon as the first vowel sound is taught, much practice in combination is given, using each vowel in combination with all consonant sounds that have been introduced, both as initial and final. As soon as a word can be formed it is taught and its meaning shown.

The pupils are taught to form the written characters (with pencil) representing the sounds and combinations as we teach them.

Last year we adopted vertical penmanship, with good results. The verbs here indicated are used only in the imperative mode at this period, and both pupils and teacher are required to use them. Outline pictures of the objects taught are sketched and hectographed in blank books in this manner. [Shows book.]

These sounds, combinations, and words I think it advisable to teach before any sentence work is attempted. In addition, I teach the names of a few members of the class, selecting, of course, those easiest to pronounce.

The vocal, ch, j, ng, q, zh, and consonant y may be taught a little later.

We have soon a vocabulary of about seventy-five words which can be spoken, read from the lips, written, and the meaning of which is understood. The voices will be well developed by these tones, and the pupils will have acquired the art of combining two or more sounds smoothly and with ease, so it will be but a step for them to combine two or more words and make sentences.

The progress in speech, speech reading, and written work is equal, and it should be kept as nearly so as possible all through the course. This work will generally be accomplished about January 1. Sentence work is then begun, and regular written drill in forms and constructions is given daily.

This period of written drill is of the greatest value. Writing the correct language forms in the proper connection with the thought which they express impresses them upon the mind more thoroughly than can be done in any other way.

The pupils are encouraged from the outset to use the language forms. They are learning to express their own thoughts both orally and in writing, and we are careful to use these forms in expressing ideas to them.

Of course, the range for expression of thought is very limited, but it gradually broadens. The pupils do not memorize language at all. They learn language by using it. This child has never committed a sentence to memory except the

Lord's Prayer. Much practice in the articulation of all new words is given and especial drill, is given upon words containing combinations like pr, tr, st, etc.

I have found it helpful in teaching these combinations, to write the word in this manner, s tōve, and have the pupils first say tōve, tōve; then have them give the short s before the word and we get stove, or have them say s and pause; then add tōve, shortening the pause each time the word is spoken until it can be spoken smoothly.

The column system is employed for all written work. Each child is provided with a large slate like this, which is divided into columns. Here is a brief summary of the first three years' work, some points of which I will speak of especially.

The complete outline, giving the steps in the order they should be taught, may be found in The Annals, Vol. XL, Nos. 2, 3, and 4.

The first point to which I wish to call your attention is the work upon sentence forms. Here are the first ten construc tions that I give, using intransitive verbs only. I have written a sentence illustrating each construction.

SENTENCE FORMS.—INTRANSITIVE VERBS.

(1) One subject and one verb.

Example:

Sam - - ran.

(2) Two subjects and one verb.

Example:

Sam
and
John - - ran.

(3) One subject and two verbs.

Example:

Sam - - ran
and
fell.

(4) Two subjects and two verbs.

Example:

Sam
and
John - - ran
and
fell.

(5) Compound sentence.

Example:

Sam - - ran
and
John - - fell.

(6) Compound sentence where one verb has two subjects.

Example:

```
Sam
and
John - - fell
and
Bessie - - laughed.
```

(7) Compound sentence where the subject of one clause belongs to two verbs.

Example:

```
Sam - - ran
and
Bessie - - danced
         and
         laughed.
```

(8) Compound sentence where both subjects are compound.

Example:

```
John
and
Sam - - ran
and
Bessie
and
I - - - danced.
```

(9) Compound sentence where both predicates are compound.

Example:

```
Sam - - ran
        and
        laughed
and
John - - danced
        and
        laughed.
```

(10) Compound sentence where both subjects and both predicates are compound.

Example:

```
Sam
and
Bessie - - danced
         and
         laughed
and
John
and
I - - - ran
        and
        fell.
```

Action writing is generally the best aid in developing this work.

It will be remembered that the imperative form of these

verbs has been given, so that the pupils already have the verb idea. Now we introduce an idea of tense. We use the past tense first, believing that it will be of more use to the pupil for a while than any other.

An exception is made with the verbs to like, to want, to have, to love, to be, and to think, the present tense of which we use. It will readily be seen that considerable thought is necessary for these sentences to be properly constructed. The words are nearly the same in each, but the ideas expressed are quite different. The pupils are compelled to think, or they can not construct sentences like these correctly.

This is an important point gained, to have developed the habit of thinking. We have also laid the foundation for the expression of complex ideas. Glance for a moment at the last six constructions.

Now see what a description I am able to give, using only the steps we have developed. The use of the personal pronouns is another important feature. Their use should be carefully taught, introducing two or three at a time while we are working upon sentence forms.

The person and number of pronouns are confusing to the little beginner. For example, this child might say to me, "Nora found your knife in Mary's box." She must say, if addressing Mary, "Nora found Mrs. Hurd's knife in Mary's box," and she must say, if addressing Nora, "You found Mrs. Hurd's knife in Mary's box."

Each verb form should be taken up and its use taught very thoroughly. A great deal of confused language may be avoided if the use of each form of the verb be understood. Let us take the verb *to walk*. I will illustrate, —— walk, —— you walk, —— you are walking, —— you were walking, and I called you. Perhaps Mrs. Hurd will walk to church next Sunday. You told me to walk. You asked me if I could walk to Morganton. Ask me if I am going to walk to-morrow. Will you talk with Mr G—— if he walks with you to-day?

The interrogative forms are very important. The pupils must learn to ask questions and to understand and to answer questions addressed to them. Each interrogative pronoun or form should be taught as carefully as were the personal pronouns. Then encourage all sorts of questions. Here is abundant opportunity for conversing and a large portion of each day should be spent in conversing with the children.

Let them ask any questions they wish. Always answer

them, framing replies in language that they will understand, and giving them as much information as possible.

Deaf children are very quick to understand who are sympathetic and interested in their speech, and if one shows but indifferent attention and interest they will soon cease trying to speak.

It is very noticeable how much more responsive children are with some than with others, and this I believe to be the reason often. We teachers sometimes err in this respect, but we should cultivate that patience with our little pupils that a mother shows toward her children. Encourage the pupils to talk with one another. Ask them questions, tell them or show them something that will excite their interest and curiosity, and many questions will be the result.

The asked and told constructions, following after the simple interrogative and declarative sentence forms have been well developed, afford an opportunity for the review of nearly all that has been given, and for the introduction of much new matter.

There is one more feature of the work that I wish to speak of and illustrate, and that is the subject of reading. All of us have had more or less difficulty in getting pupils to read intelligently. My plan is this: I do not expect them to read during the first two years. I believe that they must acquire understanding and use of simple English before they can read.

A hearing child uses language four or five years before any attempt is made to teach him to read.

As I have before stated, the pupils have never committed language to memory. If that habit is formed before pupils learn to read, as soon as reading matter is placed in their hands they will think that they must memorize it.

Early in the third year simple stories are given to the pupils. A short time is allowed for them to read the story in hand. Then they are questioned upon the subject, care being taken to so frame the question that a real knowledge of the text, not merely the words of the text, is necessary in order to reply.

Sometimes the pupils are then required to reproduce the ideas of the story in their own language.

DISCUSSION OF MRS. HURD'S PAPER.

Dr. DEMOTTE. Mr. President, I would like to call the attention of the convention to the manner in which this paper was handled. I admire it very much. This method seems to me

to draw the pupil nearer to us and I admire the plan of teaching. I think it is a very superior one.

Mr. Caldwell then announced the opening of the kindergarten section and called Miss McCowen as chairman to take his place.

KINDERGARTEN SECTION.

Miss McCowen in the chair.

Miss McCowen, in opening the work of the kindergarten section said: An explanation is due to the audience this afternoon. I may say that we expected to have given you a treat in an address from one of the most eminent kindergarten instructors in this country, but sickness has prevented the attendance of this teacher and we have called for papers, and we are grateful for these papers which will be presented this afternoon.

NATURE WORK IN A KINDERGARTEN FOR THE DEAF.

[By Miss Kate Strouse, Arkansas.]

The hills are dearest which our childish feet
Have climbed the earliest; and the streams most sweet
Are those at which our young lips drank.

The kindergarten in endeavoring to educate the child naturally, takes into consideration that he, being a part of nature, has that something within him which causes him to sympathize with nature and finally leads him to seek an interpretation and an understanding of that nature by which he is surrounded. This is God's plan for the education of the intellect. He has placed stones, plants, and animals about the child and has implanted within him a desire to know the secrets hidden in their lives. Froebel's gifts were designed to aid the child in gaining this knowledge for they "embody type ideas, leading out to the discovery of simple relations in natural things."

Pestalozzi expressed it when he said "placing before the child, in a narrow circle, and in a regular sequence, the things that nature presents at great distances and in tangled relations."

In my limited experience as a kindergartner of deaf children, I find that, in common with other children, they share this inborn love for nature. Realizing this, I planned my sequence of work for the year so that each step would not only logically

connect with the step preceding and the one following, but I tried to lead my children to see that all things come from and can be traced back to natue.

Last fall when the children came to me with their little minds almost blank my primary object during the first few days was to attract and to amuse.

I therefore presented Froebel's First Gift—the six balls, covered with the six different colors of the spectrum. We played with the red ball, and when interest in this began to wane I introduced other balls of various sizes and material.

At the same time the children were becoming acquainted with the balls they were becoming acquainted with each other and with me.

Later on I introduced the apple and other fall fruits and nuts of spherical shape. The children unconsciously learned red, yellow, and orange by comparing the kintergarten material for sorting and grouping with the colors found in the apple and fall leaves. They made charts by pasting leaves on gray cardboard beside the same standard color in paper. In connection with this, excursions were made into the woods which, fortunately, are near our institute, and you who have witnessed the delight of a little child when near the heart of nature will understand how helpful such a trip would be. The children all noticed the falling leaves, and I tried by games and material to lead them to see the protection these leaves furnished the sleeping grass and flowers.

Our protection from the cold followed this, and I showed by charts and objects how the sheep, cattle, cotton, etc., contributed to our clothing, and how, out of the storehouse of nature, we obtain the necessities of life.

Under the subject of wood they became interested in the woodman and carpenter. Work of this kind was supplemented by visits to the industrial departments.

In the spring, when all nature began to awake, the results of our fall and winter's work were very apparent.

I noticed it in the tenderness with which the children regarded the small animals about them.

One day a child brought a sick baby rabbit to the kindergarten and the children took great interest in caring for it and feeding it milk. I noticed on the wall slate one morning after my advanced class had left, the following: "Baby rabbit sick; sorry; milk give." These few disconnected words revealed a

great deal to me, and I breathed a prayer of gratefulness to our Father.

The children learned some wonderful lessons of life in their gardens, where each one planted and cared for a few flowers.

They delighted in going to the woods and in bringing the teachers bouquets of wild flowers. Froebel said that "the child that freely and voluntarily seeks flowers, cherishes and cares for them, in order to bind them into a bouquet or wreath for parent or teacher can not be a bad child or become a bad man. Such a child can easily be led to the love, the gratitude to, and knowledge of his Father—God—who gives him such gifts."

It would take too much time to give you the outline of my year's work; but I can truly say that these little ones grew in investigation and eager to know more about God's world.

I feel that work of this kind is not too ideal or too deep for the average deaf child of 6. If given in a simple way he understands it, because he is interested in it—it is a part of himself. We can not always tell how well he understands it, but it will go to make a part of him and will have its results, if not to-day, in the days to come.

KINDERGARTEN FOR OLDER PUPILS.

[By Weston Jenkins, New Jersey.]

No doubt the title of this paper is somewhat of a paradox; to some it will seem a real, as well as an apparent, contradiction in terms. It is true that children between the ages of 7 and 12 years are beyond what is known as "the kindergarten age;" it is true also that the material to be used and the immediate object to be reached in the training of such pupils can not be the same as in the case of children under 6 years old. Yet, since we no longer think of the education of the deaf as radically different from that of the hearing child, and since we conceive the university and the primary school as differing only in degree and not in kind, we may concede that the kindergarten spirit and kindergarten principles may with advantage be carried over into the post-kindergarten age.

A line of work which I think especially useful as adapting the motive of the kindergarten to the needs of deaf children entering our schools at the age of 7 to 10 years is the construction by them of objects by which scenes and occupations familiar to them in real life may be reproduced, and the appropriate use of these objects in plays suggested and outlined by the

teacher, but filled in by the children themselves. For illustration of what I shall say, I refer to the exhibit of such objects sent from the New Jersey school by Mrs. Frances H. Porter. The material used in this work is cardboard of various thicknesses cut into shape with the scissors, except that in using some of the heavier weights it may be necessary to use the knife.

Considered as a sort of preliminary manual training, the material and the tool seem to be adapted to the child's ability at the stage for which the work is designed. The eye is not taxed nor the hand cramped as with needlework or other tasks which require the following of a minute pattern. The material, while preserving permanently the form given to it by the workman, presents no difficulty in the working. The nature of the material and method of manipulation train the pupil gradually and naturally into that exact accuracy which is demanded in shopwork in wood and metal and in striving for which the untrained lad of 12 wastes so much time and so often loses interest and courage. More clearly than in almost any other kind of work with which I am familiar, the pupil sees from the start that everything he makes is meant for use, and for his own use, too.

As a basis for language teaching, this plan deserves consideration for its wide adaptability. The whole extent of the child's experiences forms the framework on which the primary teacher aims to build up the language for his use. This is the theory on which, with various degrees of skill and of thoroughness, the many "courses of instruction" for the deaf have been worked out. Here we have a way in which the scenes which are to be the subjects of the lessons may be called up with the greatest vividness and the pupil's interest may be engaged by making him not only a participant in it, but in part its creator. It is evident that a resourceful teacher can present in this way, with effect, a much wider range of subjects than she could find pictures to illustrate, or than she could make plain and interesting to her class without some kind of external aid.

Again, language taught in such a way as this is a growth from within, while that taught from text-books is applied from without. The situation creates the need for the expression. The child comes to think of the language forms supplied to him as helpful means for doing the work he has in hand rather than as parts of a special task.

The subject of the day's work suggests to him thoughts and recalls experiences for which he feels the need of finding expression in English phraseology. It is evident that anything thus learned will be better retained, and that the learning of it will give more mental power than if it were acquired distinctly as a task.

(At the close of this paper attention was called to the excellent kindergarten exhibit sent by the New Jersey school.)

KINDERGARTENING IN ITS RELATION TO LANGUAGE TEACHING.

[By Miss Margaret S. McGill, New York Institution.]

Language is the goal toward which we, as teachers of little deaf children, are striving. We may employ widely different methods in this endeavor, but we are undoubtedly united in the primary aim. To give each child under our instruction a comprehensive vocabulary and power of original and correct expression of his ideas is the acknowledged desire of every conscientious and thorough teacher in our profession.

The question has been frequently asked by those engaged in the work, and also by many other educators, "Why has the kindergarten system, which has proved so beneficial and essential in the development of hearing children, not made greater progress in our schools, and why has it not been universally adopted into all schools and institutions for the deaf?" The general excuse usually made by many of our excellent principals and teachers is the lack of space in their curriculum and an unwillingness to spare time from language and speech instruction to devote even an hour a day to a system of play.

They assert that our pupils naturally play sufficiently without special teaching or guidance in the art, and there is little danger of the deaf child, who usually enters school at the advanced age of 8 years, suffering from mental or nervous strain.

My own experience in kindergarten work among deaf children has led me to attempt to answer at least a few of the objections raised against the adaptation of the system to the special needs of our little ones.

The kindergarten may and must be a very important agency in language instruction if it is of any permanent value.

The plays and gifts open wide avenues for thought and expression if conducted as they were originally intended. As Froebel tells us, "Our children will attain a more fundamental

insight into language if we, when teaching them, connect the words more with the actual perceptions of the object. Our language would then again become a true language of life, that is born of life, and produces life, while it threatens otherwise, by merely outward consideration, to become more and more dead."

From the first the child should be led to express his small observation on the gifts in clear language and in approximately complete sentences, brief though they be. There should be a constant interchange of conversation, adapted to the child's powers of expression, during the gift plays.

To quote from Kate Douglas Wiggin, "The kindergartner who directs these exercises like a drill sergeant, requiring her recruits only to be silent and obey, has entirely misconceived Froebel's ideas."

It is much easier and a constant temptation for a teacher to do all the talking herself and assist the children so much in all their work that they fail to gain the self-reliance and independence of thought and action which is the ultimate aim of the kindergarten.

We believe with Pestalozzi that "Observation is the absolute basis of all knowledge." The first object, then, in all education is to lead the child to observe with accuracy; the second, to express with correctness the result of his observation.

There is a direct gain in the vocabulary of the kindergarten child. He is taught from the beginning to name things correctly, and absorbs many new words from the kindergartner, and gains many others unconsciously from his play. Many so-called kindergartens are unworthy the name. They are merely schools for busy work, and often well merit the criticism made by members of our profession, that they are a waste of valuable time for the deaf child, and retard and prevent the development he should gain in the first and most important years of his school life.

Upon visiting a school for the deaf, which professes to have a flourishing kindergarten department, I found the teacher, who had never had special training for the work, but nevertheless had been given charge of the department, attempting to give a gift lesson. A class of bright 6-year olds were supplied with 4-inch sticks. The teacher gave them directions for making a certain form, but before they had been given time to even make an attempt to carry out her instructions the teacher went herself to each child and arranged the

sticks according to her own ideas of uniformity and symmetry of design, then sat down with a complacent smile, well pleased with the result of her effort to produce ten uniform designs, evidently not in the least conscious that her little people all in a row had failed to gain anything from her exercise.

We would like to believe such examples as these rare, but, sad to relate, these same conditions exist in many schools, both for hearing and deaf children; though unfortunately, are more apt to be found in our schools, as the little deaf child's powers of comprehension and conversation are much more limited. Consequently the nervous, impatient teacher finds it much easier and more satisfactory to her comfort to do the work for her pupils than to wait for their slow, blundering efforts to make their own discoveries and solve their own problems.

A true, well-organized kindergarten, conducted by a teacher thoroughly trained in kindergarten principles and methods, with some knowledge of the special needs of deaf children, will never merit the criticisms mentioned. The success of kindergarten work for the deaf should be judged fairly by the best examples of the work in our schools and not by the poorest.

No system of education has been more abused and more frequently misinterpreted and misrepresented than this.

Kindergarten materials are sometimes ordered by principals or teachers who have little understanding of their use and purpose. The teachers put in charge of the work are frequently deficient in training, and after a year's experiment it is decided that the development of the children is not commensurate with the labor and expense of the department, and it is abandoned.

First of all, a kindergarten for the deaf demands a thoroughly-trained kindergartner. She should be a graduate of an excellent kindergarten normal school, and should have ingenuity in adapting her methods to the peculiar needs of deaf children. She should also understand the importance of language instruction at the beginning of her work. Such a teacher will be systematic and methodical in her presentation of the gifts, occupations, and plays of the kindergarten, and will not make the mistake of distributing the materials as confused, detached portions of busy work, accompanied by the memorizing of disconnected facts. Each gift follows the other in regular sequence, and each occupation is related to the gifts.

The gifts giving the child his perceptions or impressions; the occupations furnishing means for his expressions, according to the principle "that which follows is always conditioned upon that which goes before." Adequate time must be given for the child to grasp the ideas taught by the gifts, and to gain sufficient ability to express these ideas clearly.

These lessons must be graded according to the special needs of the pupils. Some of them come from homes where attention has been given by the mother to the awakening and cultivating of the senses, but many of them, especially in large cities, show almost entire lack of such training; consequently the teacher should devote more time to sense cultivation when necessary.

A class of beginners of average ability, ranging in age from 6 to 8 years, were given a series of lessons during the year upon the first gift, which consists of six worsted balls of standard colors. The lessons were of about a half hour's duration, and were given once or twice a week. In the course of the year the children were able to name the colors, match objects of the same form and colors, used simple sentences in describing the qualities of the ball, read short sentences from the lips relating to the placing of balls in various positions and directions, made collections of material and natural objects corresponding in colors, and learned their names; also described different actions performed with balls.

Several simple games accompanied by appropriate words and sentences were played. The constant repetition and association of objects with spoken, written, or spelled language impressed the new words and sentences upon the minds of the children.

Percepts of color, form, size, comparison, classification, direction, and number were also gained through the exercises. The lessons were always interesting and delightful to the class.

At the latter part of the year the words and sentences connected with the gift were occasionally written on the blackboard for review purposes. Blank books were also prepared by the teacher, in which were written the words and sentences of each lesson, with illustrations of fruits, flowers, and other objects associated with the colors and forms of balls, drawn with colored pencils.

These books were a never-failing source of delight to the children as they watched them grow, and new lessons were added each week. These were used as reading books and

were taken home during vacation. As their vocabulary grew and they gained ability to express their ideas in clear language their interest in the gift increased and they were ambitious to invent new games. Thus the faculties of imagination, observation, attention, and invention were continually exercised. The same method has been employed in all the gifts.

Care must be taken, however, not to allow the language work to become so cut and dried that it loses its life and interest. The ingenuity and enthusiasm of a bright kindergartner may easily avoid this mistake, for she will appreciate the versatility and increasing source of interest and pleasure to be found in gift study, conducted by a skilled leader in the spirit of play. The child must be continually stimulated in his effort to discover the secrets of the gifts, and should be wisely guided but not interfered with in his researches and inventions.

In the occupations the children should learn from the first to express their wants in words or sentences, and should be encouraged as early as possible to ask and answer questions about their work. The effort which is so often made to accomplish a large amount of pretty work for exhibition purposes is another of the manifold temptations which beset the young kindergartner.

Ideas and language should be her highest aim for the children, and all else held subservient to that end. The kindergarten games played in the circle, under the direction of the kindergartner, are an excellent means for language teaching, as well as in developing other important faculties of the mind.

Every action during the games should be accompanied, as far as practicable, with the appropriate language. At another period of the day the words of the new game may be written on the blackboard by the teacher and carefully explained to the older children.

It has been my experience that the games studied in this way are the ones voluntarily chosen by our pupils and played with the greatest frequency and zest. The familiar games were sometimes copied into blank books for review exercises.

The kindergartner should choose the games, wisely guarding against the introduction of too great a variety during the year. Children like to play the same games over and over again, just as they prefer the same familiar stories.

The games of the kindergarten books may be revised, if necessary, to suit the understanding of the children.

The morning talks should also be a means not only of bringing the little people into touch with nature, but should make them desirous of asking and answering questions upon these subjects of interest. Free conversation between kindergartner and children is also very desirable.

Surely the child has not wasted the two or three years of his school life spent in a true kindergarten, nor has his progress in speech, language, and numbers been retarded. All his faculties have been awakened and cultivated, his language filled with life and interest, his senses made acute, hand and eye skilled in manual work.

A course in manual training may follow the kindergarten course, though it may not take the place of it, as is sometimes supposed by some educators ignorant of the purposes of the kindergarten.

The systems differ widely in their scope and attainments. The skill of hand which the child gains through kindergarten handicraft undoubtedly prepares him to use the tools and appliances of sloyd with greater dexterity and skill.

"No one would believe," says Froebel, "without seeing it, how the child life develops when treated as a whole and in the sense of forming a part of the great connected life of the world by a skilled kindergartner."

Have we a right to deprive the little children in our schools of this system which develops the whole child, and may it not be one of the greatest factors in language instruction?

We who believe in kindergartens for the deaf trust the time is not far distant when every school and institution for the deaf will include a genuine kindergarten.

THE KINDERGARTEN AT THE ROCHESTER SCHOOL.

[By Z. F. Westervelt, Rochester, N. Y.]

The kindergarten at the Rochester school began twenty years ago, and continues growing steadily in favor with the management of the school, with the parents of children who are under its training, and with the officers of the State who make their annual or more frequent examinations and inspections.

The eighty children for whom provision is made in the kindergarten, for all purposes except meals, occupy a separate building and have separate playgrounds. Their meals are taken in

the dining room with the older pupils, where they are scattered about, seated by those who will take pains with their training, with the lessons which each little one has to recite in the daily morning prayers, and as well with their manners and habits at the table. The little children sleep in two large dormitories, with hearing officers in adjoining rooms, each little child in a separate cot or bed. They are under the care during the day of four supervisors, who have charge of all their home training and occupations, and of eight kindergartners or instructors, who have charge of them for five and one-half hours daily, in short periods of half hour and forty minutes each, with such changes as bring every child daily under the instruction of each one of the eight, with their separate specialties, of speech, speech reading, kindergarten gifts and exercises, language, number work, sewing, drawing, and sloyd or carpentry work. All the children, both boys and girls, even to the smallest, take part in all these exercises, and in the middle of the morning for a half hour have the general exercises of the morning circle, with its general plays together.

The children in the kindergarten are all under 12 years of age, and the majority are under 9. Those who make such advancement as to warrant their entering the graded classes of the school are promoted regardless of their age, though they are usually retained as members of the kindergarten family until they are 12.

Adolescent beginners are not received in the kindergarten. For them we have a separate department which we call the intermediate, where studies and exercises corresponding to those in the kindergarten, in some respects, are adapted to their more advanced physical development.

Richard O. Johnson, superintendent of the Indiana State Institution, was next introduced, and spoke as follows:

ADDRESS OF RICHARD O. JOHNSON.

Mr. President, and Ladies and Gentlemen: It is supposed that I shall present to you this afternoon a plan of kindergarten work as pursued in the Indiana schools. I desire to say that we have been engaged in this department of work during the past four years, and we have been very much pleased with the results. In presenting our plan of work, I do not know that I can do a better thing this afternoon than to read from

our manual of instruction, which not only gives the plan of work, but which contains the instructions by which our teachers are guided in carrying out this work.

This department was established in the Indiana Institution for the Education of the Deaf in September, 1894, with ten pupils, and has been a gratifying success in every way. Two years are given to the work, the advantages of which are particularly noticeable in such schools as ours, and difficult to overestimate. During the first year the pupils, from 6 to 8 years of age, are taught to correct their faults in sitting, standing, walking, and dress, etc.; are instructed in deportment and propriety; are trained in hand skill, observation, and imagination; are taught writing, the formation of the simplest of sentences and simple numbers in units; are drilled in proper breathing, in the exercise of the vocal organs by the utterance of sound, and in speech reading by the most natural of methods—constant repetition of spoken words and short sentences. Some attention may also be given to speech, at the discretion of the teacher. During the second year the kindergarten pupils pass into the advanced kindergarten classes and become a part of the oral department. The first-year work is carried on and is merged into primary work, but especially is attention given to speech and speech reading.

The following table will show the growth of the department:

Kindergarten class, 1894–95		10
New pupils admitted up to October 31, 1896		40
Total		50
Not returned to school	3	
Transferred to oral classes	17	
Transferred to manual classes	6	
		26
Kindergarten classes, 1896–97		24

OUTLINE OF WORK.

FIRST YEAR.

1. Correct habit, sitting, standing, walking, dress, etc.
2. Obedience, deportment, propriety.
3. "Mine and thine," truth, honor, prayer.
   Simple prayer in signs, accompanied by spoken words; daily and in concert.
4. Breathing exercises and facial and vocal gymnastics; daily drill, individual and concert.
5. Voice and hearing development; daily drill, individual and concert.

6. Speech reading.
   Teacher to use spoken words with signs at all times and for all purposes from the beginning. Begin not with single words, but with combinations—sentences.
7. Observation, hand skill, imagination.
   Adapting regular kindergarten work. (See Development.)
8. Calisthenics.
9. Numbers, names of: Arabic, Roman, and written—1 to 10.
10. Mechanical writing. Manual spelling.
    Drawing of straight and curved lines, imitation of strokes, letters and words, arm movement.

SECOND YEAR.

1. First year work continued.
2. First-year work continued.
3. First-year work continued, and further development.
4. First-year work continued.
5. First-year work continued, and speech.
   In speech use short words, beginning with those formed of elements most easily seen and acquired by pupils. Words first, elements afterwards.
6. First-year work continued.
7. First-year work continued. (See Development.)
8. First-year work continued.
9. Mental addition, 1 to 10.
10. Writing and manual spelling. Language.
    From action and spoken word. Make use of subject and predicate—past, present, and future; affirmative, negative, interrogative—introducing adjective, adverb, and preposition.

DEVELOPMENT.

FIRST YEAR KINDERGARTEN WORK.

I. Color work. *September to January.*
   The six leading colors—red, orange, yellow, green, blue, and violet.
   Gray cardboard to be used as a background.
   Color tablets; color choice; color relations.
   Recognition of color; color names.
   Study of ideal color unit. Study of individual color. Cutting of single units to make a border pattern.
   January to June.
   The six leading colors and two tints of each.
   Scales of the six leading colors in three tones, normal, light, and lighter. Figures in one tone. Borders or rosettes in two tones.

II Study of solid forms.
   1. To be studied.
      (*a*) Type solids: Sphere, cube, cylinder, and hemisphere.
      (*b*) Nature forms and common objects; objects resembling these type forms.
      (*c*) Pictures: Pictures in which objects resembling these types may be found.

II. Study of solid forms—Continued.
   2. Expression.
      (a) By modeling in clay.
      (b) By laying color tablets.
      (c) By paper folding, cutting, and making.
      (d) By stick laying.
      (e) By drawing with chalk and charcoal.

III. Building blocks. For form study and construction.

IV. Study of plane forms and designing.
   Circle, semicircle, squares, and the triangles.

V. Sticks. For designing in life and symmetry, and for teaching geometrical forms as a preparation for and an aid to drawing. Three and six inch sticks are preferable.

VI. Rings. For teaching the circle, and for designing forms of symmetry.

VII. Peas work may be used occasionally for architectural designing. Sticks are not to be used less than 3 inches in length.

VIII. Drawing. Use charcoal.
   1. Lines, straight and curved.
   2. Designing decorative forms.
   3. Free drawing.

IX. Color sketching and painting.
   1. In connection with the color discrimination developments.
   2. The free sketching and painting of objects related to conversation and to the story work.

X. Sewing.
   Lines not less than an inch in length.
   Use single zephyr. (This occupation is not to be given to children under 5 years of age.)
   The forms made are to modify the conversation and story lessons.

XI. Free cutting.
   This occupation grows out of the conversation and story work.
   When objects are cut, have them mounted upon a gray background.

XII. Mounting.
   1. Geometrical forms must not be less than a 2-inch basis.
   2. Decorative forms.
   3. The first steps in any work are taken through the use of this occupation. After telling a story, give the children the objects of the story, let them group these on the mounting sheet and tell the story to the kindergartner from the sheet that has been mounted.

XIII. Folding.
   The simple forms from fundamental No. 1.
   Use folding in symmetrical work when it will be an aid in impressing some geometrical form that has previously been taught.
   Folding sheet 5 by 5 inches.

XIV. Weaving.
   Strips not less than 1 inch, mats to be gray. The selection of the strips to depend upon the color discrimination lessons.

XV. Free braiding and intertwining.
Given to impress geometrical forms and for color work.

XVI. Cardboard molding. For geometrical forms to modify second gift and clay.

XVII. Sand table. To teach form and for representation of the story.

XVIII. Clay modeling. *September to January.*

I. The type forms.
The forms to be used are (*a*) the sphere, (*b*) the cube, and (*c*) the cylinder.

II. Common objects similar to type forms.
1. List of objects to be modeled.
(*a*) Objects similar to sphere: Ball, apple, orange, etc.
(*b*) Objects similar to cube: Box, lump of loaf sugar, etc.
(*c*) Objects similar to cylinder: Muff, round box, etc.
2. Lessons on the objects.
(*a*) Handle the objects and observe their characteristics.
(*b*) Compare the objects with the type forms.

III. Decorative work.
Work with the square tablets.
(*a*) Modeling the tablets.
(*b*) Impressing the faces of the type forms on the tablets.
(*c*) Tile making with geometrical forms and other forms grouped upon them.

January to June.

I. The type forms.
The forms to be used are
(*a*) The hemisphere.
(*b*) The square prism.
(*c*) The right-angled triangular prism.

II. Common objects (similar to type forms).
List of objects to be modeled.
(*a*) Similar to sphere: Peach, gourd, etc.
(*b*) Similar to cube: Inkstand, square can, etc.
(*c*) Similar to cylinder: Cheese, round can, etc.
(*d*) Similar to hemisphere: Half an apple, pincushion, etc.
(*e*) Similar to square: Prism, box, etc.

SECOND YEAR KINDERGARTEN AND PRIMARY WORK.

I. Color work. The six intermediate colors: Red violet, red orange, yellow orange, yellow green, blue green, and blue violet, and two tints of each.

September to January.

Study of individual colors.
Ideal color unit pasted. Normal tone. Arrange twelve oblongs for flow of color.
Scales of red violet, red orange, and yellow orange in three tones—normal, light, and lighter.
Figures and borders in one and two tones.

I. Color work—Continued.

January to June.

Ideal color unit pasted. Lighter tone.

Scales of yellow green, blue green, blue violet in three tones—normal, light, and lighter.

Rosettes and borders in three tones.

II. Study of solid forms.

I. To be studied:

(*a*) Type forms in review. Sphere, cube, and cylinder. Hemisphere.

(*b*) New type solids. Square prism and right-angled triangular prism. Ellipsoid, ovoid, cone, square pyramid and base form.

(*c*) Nature forms and common objects resembling these type forms.

(*d*) Pictures. Pictures illustrating these type solids and objects.

II. Expression.

(*a*) By modeling in clay.

(*b*) By laying tablets.

(*c*) By paper folding, making, and cutting.

(*d*) By drawing with chalk, charcoal, and pencil.

(*e*) By oral and written language.

III. First year work continued.

IV. First year work continued.

V. First year work continued.

VI. First year work continued.

VII. First year work continued.

VIII. First year work continued.

IX. First year work continued.

X. First year work continued.

XI. First year work continued.

XII. First year work continued.

XIII. Forms from fundamental numbers one, two, and three

Life, symmetry, and knowledge forms.

XIV. Weaving. First-year work continued.

Strips not less than one-half inch.

XV. First-year work continued.

XVI. First-year work continued.

XVII. First-year work continued.

To teach geography.

XVIII. Clay modeling. *September to January.*

I. The forms to be used.

(*a*) The ellipsoid.

(*b*) The ovoid.

(*c*) Review forms of first year.

II. Common objects. (Similar to type forms.)

List to be modeled:

(*a*) Similar to sphere: Round radish, melon, etc.

(*b*) Similar to cube: Toy bank, toy trunk, etc.

(*c*) Similar to cylinder: Drum, jar, etc.

II. Common objects—Continued.
List to be modeled—Continued.
(*d*) Similar to hemisphere: Cup, saucer, etc.
(*e*) Similar to square prism: Brick, double steps, etc.
(*f*) Similar to ellipsoid: Lemon, plum, etc.
(*g*) Similar to ovoid: Egg, chick, etc.

January to June.

I. The type forms.
The forms to be used:
(*a*) The cone.
(*b*) The square pyramid.
(*c*) The base form.

II. Common objects. (Similar to type forms.)
List of objects to be modeled:
(*a*) Similar to sphere: Tomato, turnip, squash, etc.
(*b*) Similar to cube: Paper weight, footstool.
(*c*) Similar to cylinder: Banana, firecracker.
(*d*) Similar to hemisphere: Half orange, beehive, basket.
(*e*) Similar to square prism: Eraser.
(*f*) Similar to ellipsoid: Melon, potato.
(*g*) Similar to ovoid: Sweet potato, mouse.
(*h*) Similar to cone: Top, carrot.

III. Decorative work.

The subjects for story, gift, and all work must be taken from the child's environment.

I believe that this is all that I can say on the subject of kindergarten work in our institution, but we have with us this afternoon a person who is in charge of our kindergarten work, and I have no doubt that you will be interested in hearing from her on this subject. I am sure that she can give you a great deal of information as to the details of the work as carried out by us.

Miss FULTON. I desire to say but a few words in regard to the work of the Indiana school, so far as the kindergarten work is concerned. I may say, in the first place, that during the first year we followed as nearly as possible the outline that has been mapped out for you by Superintendent Johnson. Our aim in the beginning of the school year is to attract the attention of the child. Unless you do something to attract the child's interest you can advance him but little. We dwell much on his home life and its surroundings, and we talk to him about his friends. Our object in doing this is to lead up to our work. In the other four years we divide the work and carry it out in detail. We have frequent reviews, as we think the success of our work depends upon that. In the first year

we teach by objects, to give the pupils right ideas of things. We also teach them about domestic animals, and we teach them the numbers from 1 to 10.

Miss Heizer, of Indiana, was asked by Mr. Johnson to say a few words.

Miss HEIZER: In my supervision of the primary grades I have found that this training in the kindergarten is a very valuable one and highly beneficial to the children. In the kindergarten the child is taught to observe, and he learns to handle and to know material. He also learns that there is to be a result attained, and that this result depends largely upon his efforts.

I think this is a good thing and that it enables the child to grasp ideas and to do better work. So far as my observation goes, the children do far better work than if they did not have this training. I think I may safely say that our work is very much better since we have had the kindergarten training than it was before we introduced it.

DISCUSSION.

Dr. WILKINSON. I believe I have a question to answer. The question is, whether kindergarten is a good thing and whether it is better to enter school at 8 instead of 4 years of age.

Perhaps you have all heard of the advice given in Punch to those who contemplate marriage. It was, "Don't." If there are any who contemplate introducing kindergarten work, I would say go slow. I believe in kindergarten work for certain places and under certain conditions. In our great cities there are always a number of little waifs who have no home. They never hear good language, nor good music, nor anything good. For that class of children the kindergarten is a blessing, from the fact that you bring these little waifs into a clean place and show them pretty colors. I think their lives are made much better for this training which you give them. But what does an institution like this want with a kindergarten, or what do we want with one in California? I do not want to see children taught from the time of birth. I do not want to teach the child when it ought to be growing. I think this is wrong. They should not be taught under 6 years. Of course, you can teach it some good habits. Every well-ordered family will do this. Do not worry it at that age. Let it climb trees and stay

among the flowers. This child will naturally study nature. Talk about colors satisfying the child. Every child of mine knows when the cherries are ripe before I do, and I have trouble to keep them out of the orchard. They get out all the time and they are always learning. You notice how they like to go away by themselves and study nature a little. I do not believe in making play a discipline. Let them work out their own observation. I do not believe the best educators will favor the kindergarten. I do not believe the kindergarten produces the best men and women. I would like some statistics on this point. How many men and women who make a mark in the world were from the kindergarten? I do not agree with all that has been said here, because I do not believe that the kindergarten is a necessary part of our work. I think we lose time. We can not afford to lose time. The work is too great for this. You know that among athletes there is such a thing as overtraining, and I think if you begin with a child at 4 years and work until he is 20 years of age you do not get the best results. This is my view of the kindergarten. I do not like to take them in at 6 years. I would rather make it 7 years of age.

Mr. SWILER. I think it serves as a good instrument in the hands of a successful teacher. The children get correct ideas of form and color and touch. I think it secures attention and is a great relief from study. In this I would differ from my friend. We know children like a little work and much play. In this way you can interest him, and if you keep up his interest you can teach him. I think, at least, children should have semikindergarten instruction in the first year. Although 8 years old, they may be really but 4 years old in knowledge. They know nothing about games, and these games help them out. Standing at slates makes them very tired.

Dr. WILKINSON. I can not see how kindergarten work differs from what I have seen for forty years. There seems to be diversity of opinions as to what kindergartening is. I am in favor of nature studies.

Miss MCCOWEN. We are pleased to hear these discussions for and against kindergarten work. We believe the kindergarten is right and will bear investigation. Let it stand or fall upon its own merits.

Dr. GORDON. I want to say a few words. I want to speak

of one feature in Illinois. We have two hours in the kindergarten and all the rest of the day the child is engaged in play. I think that should suit Dr. Wilkinson. These children are in school only two hours, and a teacher is in charge of them. She seems to have gotten hold of the spirit of kindergartening. Her object is to train these children in various ways for social life. Sometimes these children have a tussle and a fight, but that is growing less, because of the spirit of right on the playground.

I consider that it is one of our most useful departments. We notice an improvement in the morals of the children. I would have kindergarteners in charge of these children from morning till night. The work of the two hours is the same as that in the Indiana institution. The time is very short to expect any very great results. Nearly all of the children have learned many words and sentences from the lips. Nearly all of them learn to speak a great many words. They seem to enjoy that life very much. Nearly all come from such homes that the most ardent opponent would approve of the change. I feel that it is a decided benefit to them. There is another point, and that is that we take our children at a much earlier age than children are taken into institutions generally. We have no age limit. We ask, "Can your child walk up and down stairs? Can he engage in games with other children?" We have some children 4 years of age, and they are doing very much better with us than they would in the homes they leave.

Mr. JOHNSON. In the Indiana institution the kindergarten applies only to school work. They go to their schoolroom the same as the other children. They are on the playground at the same time.

On the request of Dr. Fay that the convention should be allowed to hear something about Miss McCowen's day school, Miss McCowen addressed the convention as follows:

REMARKS OF MISS M'COWEN.

I want to say that we believe that the little deaf children have not the privileges of the little hearing children. The hearing child is taught by mothers and sisters and fathers. The deaf child has no such teacher. On the part of a deaf child he must have a conscientious teacher. He needs a teacher who will take the deepest interest in him. He should be of the highest culture.

To the little child work and play is the same thing. You know when you took your little spade and dug a cave you enjoyed it, although it was work. I have seen children taught so that the actual work became play. I have seen teachers in the upper grades plan their work so that it would seem to be play. In fact, it was better than play.

It is our purpose to see that the children go in the right direction. We allow the children to lead in the play and work when they can do so with safety. When they go wrong the teacher adjusts and changes it.

One word with reference to nature teaching. Our first object is to make the child understand his relation in the world. Up to the time of entering school his whole life has been as a member of a family who is trying to amuse him. In studying our children we make it a point to observe them in their play. We study their desires. We find the leading interests of a majority of the children to whom this lesson is to be given. We try to form a universal principle and base upon it a series of lessons that will better the child and correct any misapprehension. The children may be selfish. It may be a lack of gratitude. It is a fault, and we try to meet and counteract it. In our home we are one family, and the children, teachers, and officers live together. This is home life. We believe if the child is taught to talk rapidly he will grow rapidly in the forms of speech. One of the papers spoke of the most natural method as that of constant repetition. If the little hearing babe never heard anything about talking it would never learn to understand English or any other language. The language must be associated with continual activity. He must not be left to listen only. I do not believe in too much toy work. I once visited a school where the teacher had a toy lamp made to teach the children about a lamp. I do not approve of that. It is better to teach the child the facts at once.

I wish to thank those who have participated in this work this afternoon, and those who have written papers. Our special thanks is also due to the audience who have listened attentively to our proceedings. I am sure that we have been all benefited by the work of this session.

The meeting then adjourned.

THIRD DAY.

SATURDAY, *July 30.*

MORNING SESSION.

The meeting was called to order by the president at ten minutes past 9. Prayer was offered by the Rev. Job Turner. The minutes of the previous actions of the convention were read and approved.

Superintendent Jones made announcements in regard to a change in the breakfast hour and other matters, and invited all to enjoy a social evening with music and dancing.

Mr. Caldwell, who had been appointed by the standing executive committee chairman of the committee on the normal section, stated that the absence of Mr. Abel S. Clark, the former chairman, was caused by a very serious accident to himself, but that he had already nearly completed the necessary preparations for carrying out the work of the normal section successfully.

He also announced that the names of Mr. Goodwin and Mr. Spruit had been added to those on the committee of arrangement of programme.

Mr. Mathison moved the formation of a committee composed of Mr McDermid, Mr. Nelson, and Mrs. T. P. Clarke for arranging a song service for Sunday afternoon. This was seconded and carried.

The president then called Mr. Robinson, the chairman of the industrial section, to the platform. He opened the proceedings of his section by a short address.

ADDRESS OF MR. ROBINSON.

Ladies and Gentlemen: It gives me a large measure of satisfaction to open this, the first regular meeting of the Industrial Section of the Convention of American Instructors of the Deaf, especially so at a time when there is a greater awakening to the industrial side of life than the world has ever before experienced. Our industrial history is less than one hundred and

forty years old. Historians, both ancient and modern, have invariably ignored industrial history, devoting their attention to wars and political events; but a change is working. Ancient Egyptian and Greek inscriptions are being deciphered, which throw new light on labor and the laborer and their relation to the world's civilization and progress. It is also becoming more and more evident how great a part the hand has played in the development of the human race. This fact is being formulated into a systematic training of the hand, which now goes by the name of "manual training," though the term is somewhat misleading. This training has for its object a broader and more solid foundation for intellectual, moral, and industrial education, in accordance with the demands of the age.

Most of you know my position in regard to this subject, so I shall not burden you with more than a quotation from an address concerning the industrial side of this question, which I delivered in Milwaukee in 1897 at the meeting of the National Educational Association. There is no time to discuss the close relation of manual training to mental development. Having made some investigation in that line, I shall leave it for a future paper.

The part referred to is as follows:

In regard to manual training from an industrial point of view, there are few, indeed, who realize the amount of trade teaching it involves, to say nothing of drawing, drafting, measuring, weighing, a knowledge of materials, and the operation of machinery. There is no time now to go into detail, but I venture the assertion that the knowledge and practice of so many trades and their departments are included in a thorough course of manual training, that it may be characterized as trade teaching reduced to system. All the essentials of mechanical ability group themselves about three heads: The handling of tools, a knowledge of materials, and the operating of machinery.

Only in the regular work alone of a mechanical calling is it possible to acquire that skill and speed which will ever mark the novice from the accomplished artisan. Now manual training aims to impart the essentials mentioned in four or five years. That is longer, if anything, than the average length of a deaf boy or girl's school life.

But when it is borne in mind how much time is taken up by the school work proper, physical culture, the art work, trades teaching, repairing, and other duties incidental to institution life, it may take longer. Nor is this all. Manual training admits of great extension and variety, so that it can easily be made to cover the school life of everyone.

So whether our boys and girls begin their trade in school or out of it, or, in a word, whatever they undertake, they will be all the better prepared to cope with every difficulty encountered than if they lacked such training, which I regard of even more importance to the deaf than the hearing. Right here I would like to drop a caution. In such a system of

education as is suggested by this paper, where both mental and physical powers are constantly employed, one great thing to guard against is attempting too much, which is little short of ruinous in any system.

It is at least reasonable that courses in manual training and the domestic arts should be made as obligatory on pupils as the literary course.

This is not mere theory. A very practical mechanic, now studying architecture, told me he had not the least doubt that his varied mechanical training would enable him to learn as much in shoemaking in one year as our boys did in six.

Incidental to these remarks I would like to call your attention to "Courses in sewing and cooking in the Wisconsin school," by Miss A. F. Struckmeyer, and "Manual training for boys," by Director E. J. Bending. The former were prepared for the Annals at my urgent request, and were published in the April number of that magazine for 1898. All are included in the new course of study of the Wisconsin school, a copy of which I hold in my hand.

The manual-training exhibit of the Wisconsin school is a practical demonstration of what I have always claimed for manual training, and yet it is no more than other schools for the deaf of the country could do at a little extra cost for the right kind of instructors and equipment. It is very gratifying to know that a number of the schools are already adopting manual-training courses.

I do not wish to be understood as deprecating the trades, but believe that pupils should be better prepared to take them up. And this suggests another thing, that all industrial training in school is necessarily of an elementary character, just the same as the literary work.

Were our schools trades schools, reasoning like this would not apply, but I do not regard them as such, but as educational institutions.

From study and observation of the industrial departments of our schools, I would like to close with a few remarks and suggestions which seem to me essential to the enlargement of their usefulness and the future success of those who receive their training in them.

In the case of large schools I am inclined to favor the plan set on foot by the Mount Airy school of placing the manual training and industrial department under the direct supervision of a superintendent or director, qualified both by education and training for such work. There should be a more

general diffusion of industrial knowledge as regards history, processes, and labor organizations. The instructors in the industrial departments should be graduates of the higher grade manual-training schools or institutes of technology. A larger introduction of modern machinery and appliances is necessary if the work of the shops is going to be kept up to date. For various reasons industrial instructors should be members of the teachers' associations in the various schools, the idea being favored by a majority of principals and superintendents, so far as can be learned. A "question box" could be opened in connection with this section to great advantage. More attention should be paid to agricultural branches where it is possible, since a large proportion of our pupils engage in such occupations after leaving school; and, lastly, it has occurred to me, that the establishment of a trades bureau in every important school for the deaf would be a good thing.

By such means the school authorities could be kept in constant communication with the heads of the various industrial establishments in that part of the commonwealth where the school was located, and thus be enabled to give many a worthy young man and woman a start in life that might otherwise be lost. Such a bureau would save thousands of dollars as an outlay for trades teaching, while those for whom it is made could be better fitted for mechanical pursuits through the actual conditions that prevail in industrial establishments and elsewhere.

Mr. Robinson then called for discussion and Mr. Hecker asked Dr. Crouter to explain the operation of the trades bureau at Mount Airy.

Dr. CROUTER. I desire to say that Principal Walker has addressed a circular to all our former pupils inquiring in regard to the trades they are following, and inviting suggestions from them in regard to our own work in the way of preparing them for life. The responses to these circulars have enabled us to come into closer relation with the industrial department. We also try to help our graduates to positions, both in Philadelphia and outside of the city. We try to lend a helping hand to boys and girls and aid them in obtaining and keeping a position. It has often occurred that when some of our graduates have been laid off we have gone to the management in regard to it, and as a result our pupils have been

reinstated in their positions and the hearing people have had to step down and out. Something has been said by Mr. Robinson that I would like to touch upon.

We think our department is thoroughly organized. Mr. Walker is at the head of this department. He looks after this department in every respect. All the instructors are under his control, the same as other teachers are under the control of the superintendent. The trades are taught in a systematic way, just as things are in every other department of the school. The pupils enter school at 6 years, but do not enter the trades department until they are 10 years of age. Pupils are first under the sloyd system. They proceed very rapidly, and we have ten or twelve trades, and the result of this systematic work is gratifying in every way. It has, I am sure, elevated our teaching in a remarkable way. We had a two years' course for graduates to remain and complete after completing the course in school. For the first time we have added a month more for the boys who graduate in our industrial department. This course is eleven months instead of ten months. There were twenty-five boys in the industrial department during July. During this month great care is taken with the work. The only difficulty we have is that of obtaining positions that are suitable to their training and condition.

Dr. DE MOTTE. I think that if pupils are all right that it will be an aid in securing places. It sometimes turns out that our pupils are not reliable and can not secure or hold their positions.

Mr. J. A. TILLINGHAST. It might be interesting for you to know something of the industrial work in London schools. Mr. Nelson is now superintendent of these schools. He has succeeded in securing from the London school board this arrangement: About thirty graduates of this school are provided annually with a £20 scholarship, which is equal to about $100. Each pupil upon graduating receives a £5 scholarship and is put with some good mechanic to learn a trade. The object of this money is to pay this man while the pupil is learning the trade. They are going to try this to the extent of thirty pupils yearly. They will be paid every year for five years until they have learned the trade. That is what they are going to do in London.

Dr. WILKINSON. This whole subject of manual training has been very dear to my heart, as you all know who have read

the California reports. I have always looked upon the training of the hand not so much as a means of support as of developing a sound mind in a sound body and the making of a perfect man. I have paid a good deal of attention to it, in theory at least. You will remember an article I wrote on this subject years ago. You know my idea was to have the hand trained. Dr. Crouter is right in adding bricklaying and blasting and all other trades which are useful as a means of support. It is right, as it is a means of making a livelihood, because the trades and occupations of deaf children are somewhat limited.

It delights me very much to find that the London school board is following our example. We have the same thing. We have scholarships given to them—the first year $25, the second year $50, and so on. Some years ago I suggested to my board that the pupils should have an opportunity to perfect themselves in a trade. I suggested that they select promising pupils, who take a two years' post-graduate course. That is what we call a Strauss scholarship, and that plan has been carried out.

I think Mr. Robinson spoke of our work as being preliminary, and that is true. We do not stop to think how little time our pupils have. Many people wonder why we do not turn out skilled workmen. Suppose a pupil is with us for thirteen hours a week, and forty weeks each year, saying nothing of interruptions, it would be five hundred and twenty hours only each year. Now, that would be equivalent to sixty-five days of eight hours each.

Suppose seven years in the shop after they are 12 years of age, and that makes four hundred and fifty-eight days that the pupil has in the shop. Now, to suppose that in that length of time you are going to turn out skilled workmen is the sheerest nonsense. It would be only one and a half years, and that is too short a time for any trade. This post-graduate course gives them three and one-half years, and the result is very satisfactory. The choice of trades is something that I should like to have discussed, as it is a very difficult matter to settle. It is especially difficult in small States. It is a question with us as to the trade best adapted as a means of livelihood, for our opportunities of placing pupils are limited.

Mr. DOBYNS. I would like to ask Dr. Wilkinson a question, and that is whether he thinks that local conditions will decide this matter of a choice of trades.

Dr. WILKINSON. Yes; I think local conditions will always decide this matter. There are demands for certain kinds of labor. In California we find that woodworking is best for them. It offers the best facilities for any young man. Whether in the city or on the farms, he can work as a carpenter and in other occupations. There is always something to do in woodwork. We are all using printing, but what outcome is there in printing? In these days of machines typesetting has become a lost art. The printing, it seems to me, offers few facilities for future employment. Still, some have obtained good places. It is generally in country printing offices. There is another question to be taken into consideration. The printers themselves say they are the worst lot of fellows in the world. I do not know how it comes, and I never found a satisfactory explanation for it. Of course, a job in a printing office of a weekly paper is all right. Whether we can use printing to the same extent we have is a question for consideration.

Dr. Crouter referred to the sloyd system. I can not see the advantage of the sloyd system over the Russian system. Some years ago I made a very careful investigation of this matter. I came East and visited all sorts of industrial departments, and I went back impressed with the Russian system. It is simply carrying into the shop the method of the class room. Every trade can be reduced to certain forms and mechanical principles. You take woodworking. Everything in it can be reduced to the sixteen fundamental forms. Our pupils are put upon these fundamental forms and it takes them two hundred and forty hours to go through them. It does not give them a knowledge of carpentering, but it gives them an idea of it.

In the Russian system when they go through one set of these forms they go to another shop, and so on until they get five of these fundamental trade forms. Before they go out into the world they are through all of them. We have to introduce practical work so that when they finish they can do practical work. I would like to know the advantage of the Sloyd system over the Russian system. There is one thing in Mr. Robinson's paper in regard to the position of members of the industrial corps of instructors. I think I would not favor his idea. Where are you going to stop? The baker and the cook are all teachers in a certain way.

Mr. Clarke moved either the closing of the discussion or the omission of the remaining papers from the programme.

Dr. Gordon moved as an amendment that the order of the day be taken up. The amendment was accepted and the motion carried.

TRADES FOR OUR RURAL PUPILS.

[By John E. Ray, North Carolina.]

It is not the object of this paper to enter into a full discussion of the subject of trades teaching, nor even to point out all the needs along these lines. My modest aim is simply to call attention to some of the tendencies in our profession which seem to the writer to be unwise, and to raise a note of warning against such tendencies. I think the most conservative of us all will readily admit that the trend of our deaf population is toward the towns and cities. Well, as to that, the leaning of all our people is in that way, as witness the growth and multiplication of cities which in some parts of our country spring up almost as did Jonah's gourd—in a night. And so one may argue that it is natural, or at least to be expected.

Suppose I grant this; still is not the trades teaching in nearly all our schools for the deaf of such character as to stimulate, if not to make necessary, this state of affairs?

I have been looking over the January Annals and noting the nature of the trades indicated as taught in our schools. I give you a few illustrations: Out of 52 public institutions which teach trades at all, I find 39 teaching printing, 37 shoemaking, 37 cabinetmaking, 29 drawing, 13 tailoring, 10 baking, 9 gardening, and 5 farming, and not one dairying. And yet 37 of these institutions are located in the South and the West—in sections where at least three-fourths, if not nine-tenths, of the pupils under instruction come from country homes, where farming, gardening, and dairying are the only industries known outside the house. And these pupils would naturally return to the country after graduating if they were not educated out of it.

Now, just think of it! Nine schools out of thirty-seven in the West and South giving their pupils any opportunity to learn anything about gardening, and only five even making any pretensions toward teaching farming. And I wonder if the five which are credited with teaching farming are not just a little like at least one of the nine said to be teaching gardening, of which I have some knowledge—slightly disposed, though unintentionally mayhap, to cast discredit upon the very calling which should be most emphasized! In other words, are

we not disposed to put the brightest and best boys to learning the "more respectable" trades, "while rag-tag and bob-tail"—oh, just anybody—those who can not learn to paint, or draw, or set type, or make a livelihood at one of the better crafts—are set down among the "garden hands" or the "clodhoppers?" And in this way do we not cast reproach upon the very handicraft in the learning of which we might hope to see more of our graduates with healthy bodies, strong muscles, happy hearts, and comfortable homes? And in the course we have pursued are we in any wise responsible for the large number of idle, discontented, roving, deaf men lounging about our cities or tramping to their death upon the railroad track? Is there not some way to arouse the consciences of those of us who have not done our duty, if such there be, toward the little immortals committed to our care the greater part of their minority, but have simply contented ourselves by following blindly in the footsteps of our predecessors, and not for once stopping to inquire what is to become of the boys and girls placed under our charge, not alone for mental training, but also for the responsibility as to how they are to maintain themselves and feed those dependent upon them?

Brethren, halt! Right about face! Let us give more thought to the "bread-and-butter" side of the problem. I know it is a sordid, groveling side in the eyes of many; but after all is it not the practical side, and the one upon which some of our pupils may have to look in dismay sooner or later? And is it not the end toward which most of us have to strive?

Does some one say this is all impracticable? Why? Are our schools located in the hearts of the cities? Then let us sell out and move to the country, or at least let us get into the suburbs, where we can get enough land for the purpose.

And do you say that our pupils are away from school at the time when the farm and garden most need attention and the pupils most need instruction? Well, yes; these are practical difficulties; but there are always those who can be kept through the summer if need be, and these can aid in "laying by" the crop, harvesting the grain, etc. Others might be brought back earlier in the fall if necessary; or, if the suggestion made by my good Brother Dudley, of Colorado, sometime ago, of giving our pupils a post-graduate course or extension of time for further industrial instruction, should be carried out, we might constantly have these pupils for such emergencies.

I take special pleasure in referring you to the school for white deaf children in my own State (North Carolina), which is under the superintendence of my good friend Superintendent Goodwin, as one where gardening and farming are taught most successfully, and to the Kentucky school, which has one of the finest gardens in all the land.

In the South particularly truck farming is receiving much attention. Large communities which were sparsely settled and in poor condition a few years ago have grown into prosperous villages and thrifty neighborhoods within the past few months. People from the North, from the West, and from Europe have moved in and converted whole townships into busy, thriving, pulsating masses of humanity. The raising of berries alone along one short line of railroad in North Carolina has reached immense proportions, and the shipments amount to thousands of crates daily. What was once regarded as the least desirable section of the country has become one of the most prosperous; and even one part, over which I am told if birds wished to pass years ago they found it necessary to carry their rations with them, has been made to "blossom like the rose," and one finds there the largest peach orchard known save one, and grapes and berries and vegetables are shipped by train loads.

Now, for such work as this, for which the deft fingers of the deaf would seem to be peculiarly fitted, and for floriculture, landscape gardening, dairying, etc., why shall we not fit our pupils? And why shall we not teach our pupils in these branches where they may hope to secure positions which will place them where living expenses are merely nominal, instead of practically forcing them to follow some mechanical trade which will drive them from the fresh, pure air of the country into the crowded, dusty city, where it will cost them from three to five times as much to live and where there is already most serious congestion, and where competition is so much against them?

It will be noticed that I have not argued against the various trades taught in our schools. I had no such desire. They are very good. But let us not confine ourselves to them, and particularly do not let us force our pupils who come from the country to learn these and no others; and let us not put our pupils where they are placed at the greatest disadvantage in the great centers of congestion and stagnation. The moral question, too, is worthy of consideration, but I desist.

MANUAL TRAINING FOR THE DEAF.

[By E. J. Bending, Wisconsin.]

In presenting to this assembly an article on manual training there are several obstacles one has to contend with on account of the work being a new departure in the schools for the deaf.

First. Any change in the system of education is generally met with disfavor.

Second. The majority of teachers of the deaf are under the impression that they now have manual training in their schools.

In regard to the first objection I will say that manual training is no longer an experiment. It has proven itself an essential to the curriculum of any school of engineering, technology, and applied science. In all the larger cities it is now a recognized part of a system (not a system apart) of the public schools, to say nothing of the independent and private schools devoted entirely to manual training. I have only to cite you to the Brooklyn, Boston, Chicago, Cleveland, Louisville, Kansas City, St. Louis, Toledo, Dayton, and Philadelpia schools, with which you are familiar. Their maintenance, success, and support can not but prove my first point. Their growth has been slow but healthy, dating back to 1836 in European countries, and to 1853 in the United States, when a free school for the youths of Worcester, Mass., was endowed with $500,000, its chief object to be the education of the mind through the long-neglected members, the eye and the hand, and secondarily to prepare them to meet the practical side of life. It was fully equipped for the different branches of mechanic arts and drawing. From this start, with many a hitch and strong opposition from men whom it was supposed had broad intellects, the new system of education has sprung up in this country.

The second objection is harder to eradicate. In every deaf school there is a system of trades teaching, which must not be confounded with manual training. In the latter there is no attempt to teach a trade. The objects are entirely educational. If a boy wishes to follow a trade he has the foundation of several to choose from. We teach him to be a skillful workman in anything he does, and all he then requires is a little practice to become proficient in any one. His brain is developed, and he has the power to do as well as the power to think.

Manual training is but the extension of the Froebel system, an advancement of mental training with those undeveloped parts (the hand and eye) as mediums. A system of education

without manual training is as far behind the requirements of the present day as would be the old stage coach compared with our elegant passenger trains. The former was good in its time, but could we go back to it? You must not forget the strides that have been taken in everything but educational lines.

To those whose only hope of learning is through feeling and seeing manual training is a boon. The system of confining the boy to one special trade is like the old coach system—it was good in its day, but we have long since outgrown it. It confines the boy to a narrow, poor-paying field from which he can never hope to rise.

Within the last few years there has been almost a revolution in all trades. The old adage, "Jack of all trades and master of none," will not hold good at the present day. He must be master of all to be the practical mechanic of the nineteenth century, and to confine the boy to the old system is doing him an injustice.

I once heard a gentleman addressing an audience. In the course of his remarks he said: "We do not need manual training in our schools for the deaf; the boys get all the manual training they need at home, and more, too, by following the plow." Bless his dear soul! I felt like thanking him for his broad ideas, and recommending to our superintendent that he purchase a yoke of oxen and a plow at once, so our equipment at the Wisconsin School for the Deaf would be complete. Yes, plowing is manual training; so is digging in the ditch, but how many of you want that kind of an education? Is this progressive? Is it a broad education? Will it educate the whole boy? If you want the plow, teach the boy the underlying principles upon which the plow is constructed—viz, woodworking and forging—and his lessons amount to something. He has the chance of becoming a skilled mechanic in a good field, or of becoming a manufacturer. In the plowing he is not much better than the animal that draws the plow, while in teaching him how it is constructed you reach the intellect, and if necessary he can use that plow with much more skill than the average boy who has followed it for years and who had no training with the eye and hand in conjunction with the brain. The case of the plow will apply in any other case. I merely take that as an example, because I could not help but pity the man who said it.

I have another man in mind who has been a prominent educator for many years, and when an appropriation was asked

for the mechanical laboratory he was very much opposed to it and said, "We did not have such things when I went to school," and opposed the cooking and sewing in the schools for the reason that when he was a boy the mother used to teach the girls such things. Strong arguments, are they not? He is living in the past, and forgets that it was sixty years since he was a boy, and does not know that the education that would fit a young man to cope with the problems of life sixty years ago will not do it now. Many things have changed since then, and we daily come in contact with many things that were not thought of sixty years ago.

I am of the opinion that manual training in schools for the deaf is more of a blessing than it is in our other schools, for the reason that these boys, being deprived of their hearing, are barred from many of the callings and professions that others enjoy, and a general knowledge of mechanics must be an advantage to them after they have left school and taken up life's battles for themselves. The fact that they are deaf does not in any way impair their sense of thinking and reasoning; and with these mechanical ideas would it be unreasonable to expect some time in the future to find among these deaf boys another Watt, Stephenson, Bessemer, or Edison?

I will now endeavor to give you some idea of the work and its aims and objects. The manual training work for boys from 9 to 12 years of age consists principally in the making of a series of small objects from wood, based upon geometrical figures and solids, and involve in their construction the use of the rule, pencil, compass, try-square, gauge, and knife. It has been arranged, both as to exercises and models, upon educational principles. The models have been placed in order from the simplest to the most difficult, and the exercises involved are so arranged that the intelligent execution of each shall depend in a measure upon the knowledge of those preceding. The lessons must be as carefully prepared by the teacher as lessons on any other subject. A mere glance at the models can give no idea of the educational value of manual training. It is only when the exercises and their relations to each other are thoroughly understood that its possibilities are revealed. The different steps and their relations to the work as a whole should be carefully kept in view. The pupils should not be told when it is possible to lead them to observe and reason for themselves. They should be taught to depend

upon the knowledge they have already acquired from preceding exercises to express their thoughts and observations and apply them to the lesson under consideration.

Before constructing each model a working drawing of the model is made by the pupil, and this drawing is to be used by him in laying out and making the model, and these mechanical drawings are to be followed throughout the entire course.

In learning mechanical drawing he is learning a universal language. A mechanical drawing made in the United States by an American may be sent to Germany, France, or any foreign country, no matter what the language, and it would be understood at once. It may well be termed a universal language.

Now, let us take up one of the more advanced exercises and follow the boy through with it. He has dressed out the stock to $1\frac{3}{8}$ by $\frac{3}{4}$ by 12 inches long. It is sawed in two in the center and makes two pieces 6 inches long. He is now required to make a through mortise and tenon, the mortise to be $1\frac{3}{8}$ by $\frac{3}{8}$ inches in the center of one piece, the tenon on one end of the other. As we do all our gauging from the face side, what must we set our gauge at to lay out a $\frac{3}{8}$ mortise in the center of a $\frac{3}{4}$ piece? There are $\frac{12}{16}$ in $\frac{3}{4}$ inch; there are $\frac{6}{16}$ in $\frac{3}{8}$; $\frac{6}{16}$ being half of the whole, we must subtract 9 from 12, which leaves 3, so we set our gauge at $\frac{3}{16}$ and gauge one side of mortise and tenon. Now we have had a little sum in subtraction.

We wish to gauge the other side of mortise and tenon, so what will we set our gauge at this time? As we have gauged off $\frac{3}{16}$ inch to reach the other side of mortise we must add the $\frac{3}{8}$, which is $\frac{6}{16}$; $\frac{6}{16}$ and $\frac{3}{16}$ are $\frac{9}{16}$. Set the gauge at $\frac{9}{16}$ and gauge—a little sum in addition. So we find that the boy is working in mathematics; he is learning practically to apply mathematics. But what else is he learning? Our teachers all remember how many cut fingers we had when we first started in with manual training. They may have thought it rather barbarous, or carelessness on the part of the instructor, but let me assure you, whatever it might have been, the boys were learning a good, practical lesson. He soon found that he could not use sharp-edged tools without having his whole mind and thought concentrated on his work. Let the boy allow his attention to wander for a single moment and his unsteady hand has made a false stroke and the exercise on which he has spent hours is ruined. The teacher rejects it. He must try it again. He must work to the lines. He must

be more accurate in his measurements, for the unerring rule and square detect the least imperfection. He is learning accuracy. He goes to his task more determined this time, for his little neighbor has finished the same exercise and has commenced another. He is anxious to try his hand at the same one. He succeeds this time. He is learning self-control and perseverance. All these things are a help to him in the class room. It is easy to lead the boy in things that interest him. He is interested in tools and he is interested in things that he can make with tools.

When he takes up the work at the turning lathe he experiences a pleasure in seeing the rough piece of wood assume some graceful form. Here the eye becomes accustomed to proportion, for he must in a great measure depend upon his eye to shape his work.

The training given by the shop work in its different phases cultivates and strengthens the pupil's powers of observation, of thought, of application, and cultivates habits of precision. It gives direct and systematic development and education to the powers.

As he advances in the woodwork to pattern work we find that it requires more careful thought and study, a steadier hand, and better workmanship than any other branch in the woodworking line, and this is so closely allied with the molding that one is not much without the other. Taking the two as a whole, I am of the opinion that it has more of a tendency to lead up to the inventive than any other part of manual training. From this he advances to the forge room, and here he finds that there is still a necessity for having his whole mind on his work. Here he has three things to handle at once—hammer, tongs, and material. He must watch well his iron or it is too hot or not hot enough. When the iron is taken from the fire and thrown on the anvil he must strike a quick and well-directed blow in order properly to shape the piece before the iron cools or it necessitates another heating. By the time he has taken the whole course in manual training he has become self-reliant. He has formed a habit of concentrating his mind and better applying himself to whatever he may undertake.

We do not teach any one particular trade, but aim to give the boy a fair knowledge of several trades and the use of tools and material used in these several trades, or, in other words, a fair insight in general mechanics and principles used therein.

The work in the mechanical department is fascinating and

appeals strongly to the boys. They leave desk and class room eager for the work here. In a measure they throw off the restraint that is required in the class room and find the work restful and at the same time good exercise.

And now a word for the girls: They should have an equal chance with the boys in their own special line of work, for they must in the future preside over some of the homes, and how much health and happiness depends upon properly prepared food, well made and mended garments, a neat and tidy home.

When every town and city has adopted manual training the first step toward solving the servant-girl question will have been solved, because skilled labor can always demand just compensation and command respect and dignity.

Edward Atkinson, one of the foremost economists of the day, estimates that over a billion dollars' worth of food material is annually wasted in American kitchens. This is another evil the manual-training schools are working to overcome. The cooking taught is wholesome, appetizing, and is economical—good for rich and poor alike.

GENERAL WORK IN PRINTING—JOB WORK A SPECIALTY.

[By F. C. Larson, Wisconsin.]

Printing has long been regarded as one of the most desirable trades to be taught the deaf. It is not only a good trade for the pupils to learn, but is a factor of no small importance in the literary education of the boys and girls. The printing office has been called "the poor boy's college," and it is well named, but if the college is to do its work, the typesetter must be anxious to learn. There is no occupation which requires such care on the part of the learner. In order to conduct a printing office successfully there must be first, a well-equipped office; second, a competent instructor. In the schoolroom the best text-books, charts, maps, etc., are used. The old time pedagogue worked under all manner of disadvantages, and though we are inclined to surround him and his tasks with a poetical halo, permitting distance of time to lend enchantment to the view, the facts of the case are hard enough. A schoolhouse in such a condition that rain and hail had free entry the desks and seats of the most inconvenient description, text-books as interesting as the dictionary, had no bright thing to make school life a pleasure.

But glance at the conditions of the present time. The idea that knowledge must be gained and health take care of itself, has been superseded. Witness comfortable schoolrooms and the banishment of the screaming, protesting slate pencil. Save time. No more hours of fruitless studying of abstract theories, but make mechanical demonstration of these theories which enables the pupil to grasp the fact firmly and quickly. These principles apply strictly to the equipment of a printing office in an institution for the deaf. Give us modern appliances—the best the land affords can not be too good—that instruction given may be obtained in the least amount of time.

It is certainly just as essential that the printing office should be equipped with the best material, latest type, and improved machinery, such as is found in any modern and up to date printing office. We live in an age of progress and we should be keenly alive to that which will place us foremost in the ranks of the profession. The hand press has had its day and now it is the cylinder and perfecting presses capable of making thousands and tens of thousands impressions an hour.

The apprentice, on entering the printing office, first of all is initiated into the ranks as "devil," beginning at the bottom, doing the "dirty work," such as washing the rollers and presses, sweeping out, etc. Next he is instructed in plain composition, distribution, and presswork, and as he gains in proficiency, work of a more difficult character is given him, until finally he is initiated into the intricacies of the various designs of job work. Each apprentice should be qualified as an all-round printer before he leaves the office to start out for himself, able to do anything from straight typesetting to fine job work, and with a command of the mechanical details of the office; and to attain this end the instructor must be a capable and practical printer of wide experience, informed on all branches of the trade. To impress the many object lessons upon the minds of the students the instructor should devote all of his time and attention to his pupils while in the office and have no other duties to perform.

A clean proof as the result of a careful distribution, is a lesson of importance; put special stress on the importance of even spacing, having the lines the same length and the spaces evenly divided; that a stick should be read and corrected

after it has been filled. The tendency is, I find, to become rapid compositors and have no thought of a clean proof; but here is where time is lost, for so much time is consumed in correcting the "dirty proof." As nearly as possible let each pupil correct his own proofs. It is not always the fast compositor that is the successful printer, but rather he that is careful and thorough in his work. Making up forms and running the presses are next in order, and both are important branches; in this connection instruction should be given as to how rollers are to be cared for and kept, also how ink is to be treated and the result of blending colors, etc.

Every tool and piece of material in the office should be called by its proper name and all the cases labeled, giving name and size of type, and thus pupils will be able to become acquainted with the various fonts of type and their relative sizes.

Since the introduction of typesetting machines it would seem better to run the institution printing office and instruct the apprentices on the lines of first-class job offices, where the machines are not so liable to intrude, and where our pupils are most likely to secure employment, for good job printers are always in demand. Then it is of more importance to be a job printer than a compositor, and as it takes more time to teach job printing more time should be devoted to this department of the trade and less to straight composition. If need be let the issues of your paper be less frequent; if now a weekly, make it bimonthly or even monthly. Do all the work for your own school and solicit work from the other institutions of your State. I don't think it advisable to solicit work from the business houses of your city, as the local offices are entitled to it.

HOW SHALL THE PUPIL'S TIME BE DIVIDED BETWEEN SCHOOL AND SHOPS.

[By F. D. Clarke, Michigan.]

As a young teacher, enthusiastically interested in the mental development of my class, I used to think that all of the best part of a pupil's time should be given to school work, and that any odds and ends of time were enough for his trade. Like many another idea which I had at that time, this one has been gradually changing, and perhaps there may be those who think that I am now as far wrong in favor of the "shops" as I was then in favor of the "school."

In this paper I shall treat only of "trades teaching" and not of "manual training," "sloyd," and other exercises of this sort which are taught to young pupils. I do this not because

I undervalue such exercises, which have a very important place, but because my time is too limited to do justice to both subjects.

In the information kindly put into my hands by Mr. Warren Robinson as an aid in preparing this paper, there is nothing bearing on one important point: At what period of the school life should instruction in a trade begin?

There is, you see, a division to be made not only in the time each day, but in the whole school time of the pupil—the number of years he is in school.

It is at once plainly seen that many circumstances must enter into the settlement of the question. The most important is the number of years that a pupil is allowed to attend school and the age at which he is admitted. A division that would be wise in Michigan, and which with the abundant time allowed there might work well, would not suit another State at all.

We have decided that about 12 or 13 is as early as a pupil can be put to work at a trade with profit. As our pupils come to us at 7, this exempts them from all shopwork for the first five years. Of course, there are exceptions to this rule, as many of our pupils do not enter until long past 7.

Our school is divided into two departments, the primary and advanced, which are sharply marked by the fact that one of them goes to school morning and afternoon and the other only morning or afternoon. In fact, they are constantly spoken of as "all-day" and "half-day" classes.

Our all-day classes are grades 1 to 5, and the five hours spent with the teacher are, with the younger ones, all the school work they do. As the pupils advance the power of studying away from the teacher is gradually acquired, and the time spent in "literary" studies is increased by the evening study, at first only half an hour, but gradually longer.

We find five hours a day—twenty-five a week—none too long. The time is broken by an hour and a half at noon and by a few moments for physical-culture exercises in the middle of the morning and again in the middle of the afternoon.

In addition, much time is spent outside of the schoolroom. Walks must be taken to furnish subject-matter for language exercises. Rooms, halls, houses, and grounds must be measured for map building. Capes, islands, bays, etc., must actually be seen to be realized by the children. Geography at first must be largely studied out of doors. Our best teachers in

pleasant weather have a great deal of business with their classes outside the schoolroom. Then there are several of the kindergarten occupations that we use with young classes, physical-culture drills, drawing, etc.

When ready to enter the sixth grade our pupils, as a rule, have considerable mental development and a very decided opinion as to what trade they wish to learn. Our aim is to teach them a trade thoroughly, so thoroughly that they can go into a factory, or wherever that trade is followed, and take a place without asking any favors.

We consider it also very important that they should have acquired the habit of industry; that they should know what it is to work for hours at a stretch without an interruption or a rest. We consider this training in steady work as important as any other part of the training that we give them in the shops. The only way that we can do this is by working long hours in the shops. Our pupils work one week from 7.30 to 11.30 a. m., and the next week from 1 to 5 p. m., and every Saturday morning. These hours are hard on them at first, and much judgment has to be exercised in excusing beginners during the first few months, but by spring they can all work four hours at a stretch without undue fatigue. If it were not for disarranging domestic affairs, we would lengthen this to five hours, or a workman's half day.

The result is that when they really begin work they quickly become accustomed to working a whole day, and, as a rule, are steady workmen, who keep their places, though we have had some complaint that they want a holiday on Saturday afternoons.

The only school that has as long shop hours as we do in Michigan is the Utah school, whose shop time is thirty hours a week, ours being only twenty-four. Wisconsin keeps its advanced classes three and one-half hours; New York, western Pennsylvania, Nebraska, and Hartford use three hours a day in the shops. If this is an unbroken period possibly it may be long enough to establish the same habit of steady work, which we find four hours none to long for. The majority of schools give two and one-half hours to the shops, and some of them only one and one-half hours. I can not see how they expect to accomplish much in so short a time.

There is another point that needs debating. Some pupils learn their chosen trade perfectly before they are ready to

graduate from school. Some, on the other hand, can pass a graduating examination before they have learned any trade. What is to be done with these?

Keeping constantly in mind the fact that the school is for the benefit of the pupils only, we have tried some experiments with the classes. Where a pupil knows his trade, and is far behind in his studies, a little judicious encouragement will usually induce him to learn another trade, and so have two strings to his bow. This second trade is generally mastered with surprising quickness, and this way out of the dilemma works well. One or two pupils who were fitting for college, and who were well up in their trades, have been allowed this shop time for extra study. In some cases this worked well, and in others it did not. It is a dangerous experiment, unless some teacher oversees the study during shop hours.

We have had several who wished, after being prepared to graduate, to spend another year entirely in the shop. The trouble with them is the evening study. Having no lessons, they are out of place in the study room, and had no other place to spend the time between supper and bedtime. Some, too, have shown a disposition to avoid Sunday exercises, but this has not been allowed.

A thorough mastery of a trade is so important to a deaf boy or girl that such slight troubles as these have been gladly borne when the effort in the shop was earnest.

In conclusion, I desire to say that it seems to me that instruction in a trade should not begin until the boy or girl is at least 13 years old, and sufficiently developed to use the tools of that trade fairly well; that the time given to it should approach a workman's half day and be in one period; that pains should be taken to give every pupil the habit of working steadily; and that, if necessary, a year, or even two, should be devoted to exclusive trade instruction, where it seems to promise good results.

BARBERING AS A TRADE FOR THE DEAF.

[By William Nurse, Ontario.]

Ladies and Gentlemen: It may not have suggested itself to you before, so in the interest of the pupils of our schools I respectfully submit the question, Why do not more of our graduates take up the trade of barbering? It is a trade easy to learn, the work lies right at hand in every school and in

sufficient quantities to keep from one to three boys busy every day after school hours, and it costs little for needed articles and appliances. I can only suggest in answer: (1) That the value of the trade is not properly estimated. (2) That sufficient proper appliances are not provided. (3) That no qualified instruction is given. (4) That where opportunities for learning are given the limits are too narrow.

I am aware that in most schools one or two pupils give their attention to the needs of the boys in this direction, but as far as I can learn few put their training to practical use when they leave school, and I believe that the reasons specified above may be the cause of it.

To make the trade of practical benefit to our boys, it should receive as much consideration as other departments. A room should be set apart and proper chairs and other appliances that form a well-appointed shop should be provided. A qualified instructor should be put over it, as with other trades. The methods of the self-taught will usually be found crude and lacking finish, and a few lessons from an experienced person will help a boy more than he can gain by months or even years of self-practice.

From the ease with which the trade is learned many hearing young men are taking it up and are crowding each other. For this reason I would advocate that it be used as an auxiliary to the other trades taught, and that, instead of one or two boys being allowed to do the work, every handy boy in all our shops should be given a chance to gain practice. If one or two boys were drawn from the other departments, each for a few days in turn, the value of the trade would acquire a broader scope. In connection with the shoe and tailoring trades I consider that it would be specially useful, as both are indoor trades and require little capital to start upon. A boy trained to run a shoe-repairing shop and serve a barber's chair in addition would, I believe, go out as well-fitted to gain an independent livelihood as could be desired. In many small places there is not sufficient custom to support a barber or shoemaker separately, but for a hand trained in both trades a respectable living could be assured.

The work of an instructor would be light. There would be no cutting out or preparation of work required, and to supply the need of qualified instruction I would suggest that someone already in the employ of our schools get the necessary training and take it up after school hours, in addition to his present

duties. To get the training necessary would not be difficult. A training of the hand and eye in any trade gives a general idea of the underlying principles of all, and to take up another trade, especially such an easy one as barbering, requires only the mastery of details and practice.

If the above suggestions are carried out, the question would be met at little extra expense to our schools, and a valuable addition to the industrial departments would be created.

TRAINING SHOEMAKERS.

[By Parley P. Pratt, Michigan.]

To be a successful teacher of shoemaking, a man must be a well-educated shoemaker with plenty of patience and firm kindness. He must have some knowledge of geometry and chemistry and some shoe-factory experience, and especially a thorough command of the sign language.

He must understand pattern drafting from lasts. He must be accessible to the boys at all times, and he must understand how to help the boys control their tempers.

He must, if possible, prepare a course of work for five years or more. These courses will tend to make the boys almost finished workmen.

He must not take any work from the boys and finish it himself. He must remember that he is appointed to use his knack of training shoemakers.

He must understand how to show the boys how to keep machines and tools in good order; by all means, he must see that the boys do not meddle with machines and tools.

He must write lesson questions on the slate or give a short talk once a week and do all he can to help the boys get well posted on general information relating to the art of shoemaking.

He must encourage the boys to read the publications and catalogues, from which they will learn many useful little things. He should receive as good a salary as the male teachers in the school.

The shop should be well supplied with modern equipments, tools, and drawing instruments.

Before going into the shop the boys should have learned some mechanical and free-hand drawing. This branch is very important.

Shoe repairing and custom work require more judgment and more skill than formerly, because factory-made shoes are not alike in make.

Now, I would select a boy who has learned simple mechanical drawing, and send him to the cutting board, and give him a last and show him how to draft a pattern from it.

If after a few lessons he begins to understand the work, he may send the fitted uppers to the laster. Let him use his judgment to detect any faulty part in the upper on the last. If he sees that the upper does not fit the last he should correct the original pattern, from which he drafts a complete set. He then may cut and file iron patterns. When he has finished a year's course he is sent to another job. Each advanced boy should have a helper.

Lasts are made in various shapes, hence patterns must be drafted to fit them.

If a boy continues on welt work till he has finished about twenty-five pairs of shoes, he is then put on another course (turn work). It is good for each boy to have a helper.

I have some girls taking lessons in upper fitting. Some of them ask me if they should fail to get work in a shoe factory what they can do. I say, "Go and try a hat factory or buggy trimming." The understanding of operating machines opens several roads to them.

DISCUSSION.

Dr. FAY. I should like to say a word in regard to Mr. Ray's paper. It expresses an opinion that the tendency among the deaf is to congregate in large cities. I have heard others say the same thing. I used to think the same thing. But the censuses of 1880 and 1890 show that a great majority of the deaf are to be found in the villages and the rural districts, and that the supposed tendency among the deaf to congregate in large cities does not exist In some respects the census returns are not reliable, but I think that in this respect they are correct. Of course, this does not detract from the argument of the paper, but strengthens it. If the life of the majority of the deaf is to be spent in the country, then we ought to give them a training that will best fit them for that life.

Dr. GALLAUDET. I want to take a few moments of the time of the convention on this subject. My work has been with the higher intellectual training, but I feel a deep interest in this department. I look upon it as one entitled to most serious thought and the best judgment. The most earnest effort of the educators of the deaf should be given to the interests of those

who are committed to their care. I have never ceased to be interested in this branch, for the reason that many who came to us at Washington have been, in some instances, compelled to go into the industrial lines of effort. In connection with the paper, I would like to say that many young men have become fruit raisers, gardeners, and farmers. I think their success in these lines has been helped by a higher college training. By this training they have been able to bring scientific knowledge into practice. I wish to speak with emphasis of Mr. Ray's suggestion, because it will reach and help many in our schools, even the most intelligent, who take higher training. If we can make their career better we shall have settled one of the most difficult of problems, namely, how to get people to leave the city and go to the country. If we can get the deaf to seek the country we shall be doing a good thing for them.

Mr. CLARKE. I would like to say a word or two on the paper which I read. This has become an age of specialists. Take the very illustration given in Mr. Bending's paper, that the right way to teach a man to plow was to teach him to make a plow. I want to say that is a mistake. I had the advantage of learning a trade, and I think I could make a plow. I went fishing one day, and saw a man plowing. I thought it was easy, and I went over to plow for him. The horses thought differently. It was the hardest half-hour's work I ever did. If you want a man to plow, teach him to plow, and not to make a plow. It is the same thing in any of the occupations. We need boys who go out of their school knowing their business. For instance, we speak in a general way of shoemaking, but when the boy goes into the factory they ask him what he can do, whether he can cut or whether he can draft, or what he can do. I always say this boy knows his business, and he can generally get the place. We send boys to Grand Rapids. The foreman of the factory there said to me, "I want a boy who can do the work and not tell me how to do it. We pay to have work done." I believe in manual training, and I wish every boy had manual training before going into the shop. I do not believe a deaf boy will ever do so well until he has learned a trade in all its parts. We must go on with trades teaching if we intend our boys to learn to work at trades. There is a great deal said about abandoning the trade of printing. You know there is a great revolution in this trade. We must do as suggested by by Dr. Crouter, of Philadelphia. If our boys learn a trade

they must learn to do it just as well as anyone else can. One of our pupils is on a Grand Rapids paper and is one of the best printers in the State. Five graduates of printing are at the head of printing establishments.

If you teach your boys well, they will get places. If you teach them to set type and they make mistakes, they will not get a job. If you make a good printer he will get work, and if he can estimate the cost of printing he will be still more valuable.

About the choice of trades. We have a trade in the Michigan school, that of tailoring. I think it is a hard life, but we can not always select what we like. One of our alumni tells me that the girls are always able to get work at this trade. In our alumni meeting the pupils discuss this matter of trades, and they want us to keep on teaching tailoring. I have girls who want to go into the printing office, but I say, "No, unless you have a friend who wants you to work for him." I do not think it is a good place for a girl in a general printing office, and I do not permit girls to learn this trade unless they are to go to work in the office of a friend or relative.

Mr. ARGO. I want to say a few words on this subject and call attention to a lack in teaching the trades. A few years ago, when we introduced the shoe trade in the Kentucky institution, I wrote to a gentleman in Louisville who makes uppers and deals in shoe findings. He was a man who thought a great deal on this matter. He wrote me a four-page letter, and said, "I always give my foremen orders to employ a deaf man when he applies for a job." He said your institutions do not teach the trade thoroughly. He said the pupils were not exact in their work. He also said they were lazy, and that they had not been pushed hard enough in the institution. If you want your boys to make a success they must do thorough work, like other men. Last summer one of our boys went to Denver to get a job. The first thing he did was to print circulars on the press. It made 50 revolutions per minute more than our press. He could not do the work and the man said, "I will give you two weeks to learn the work." He learned to feed that press and succeeded in holding his job. I think we do not pay enough attention to details.

In the Southern institutions, I think, we are not satisfied with trades as they are taught. Our carpenters do not know anything about teaching. I sent my carpenter to St. Louis to

investigate a manual-training school. I insist that a man to handle this department should be capable of doing it in a systematic manner, and capable of instructing the boys how to work and teaching them to work rapidly. If this is done they will go out as good workers, and when they get a job they can hold it.

Mr. SWILER. I do not want to make any extended remarks in relation to this subject. I want to say that, in my judgment, the introduction of manual training largely solves, largely removes, and prepares us to solve the problems that gather around these trades schools. Printing is not what it used to be, and we can not encourage our pupils to go into the printing office. We can not prepare expert printers. The old style of making shoes is gone.

This shop is not of the relative importance that it has been in the past. I think the woodworking is growing in importance. I think in manual training we should take the boys at the age of 10 and begin to teach them to use tools. Let the exercises be in various kinds of work, such as turning and pattern making in connection with molding.

If the boys are not patient enough to sit at the workbench they will not make good carpenters, and you may provide them with something else to interest them. It is not the purpose of the manual-training school to remove the trades school, but to precede it. It is a preliminary work, and the boys do better if they have it.

There are many kinds of work you can teach in wood and cabinet and furniture work. I think this work is most valuable to our boys, and it enables them to compete with other boys. The cooking under instructors has done for the girls what the old system without instruction never could do for them.

Dr. CROUTER. This distinction that has been raised between manual training and trades teaching is a good one.

There is a great difference between the two. Trades teaching is the practical application of the principles of manual training. With instruction in manual training alone our pupils would gain a knowledge of theory, but they would fail to get the practical part of the trades. In proportion as we make them experts, so will they be better fitted for lives of usefulness. I once visited a large manual training school in Philadelphia. It was interesting in almost every department. I

put this question to them: Are you going to apply this knowledge after you leave this school? Not one boy answered in the affirmative. The school is conducted for the intellectual development of the pupils rather than for the practical value of the trades to them. I visited a few days ago a large shoe department in Philadelphia. I was astonished at the large amount of machinery. I do not wonder that boys have difficulty in getting a position.

It doesn't do to make cobblers out of our boys. A majority of the shoes are made in factories, and they are the best ones, too. The best shoes made to-day are made on what is called the Goodyear machine.

You can do better sewing on a machine than you can do by hand. I made this visit with a possible view of introducing machinery into our shop. We must keep up with the progress of machinery in the trades if we mean to succeed. We have decided to put in a machine.

Mr. F. D. CLARK. I have several boys who work the machine.

Dr. CROUTER. We teach the principles of shoemaking, but if we wish our boys to get positions in the factory we must have the best machinery. I saw 300 girls at work there and making good wages. In regard to printing, it is a trade we must handle very carefully. We must improve our plan of teaching it. We must introduce the linotype. It is expensive, but a deaf boy can learn to operate a linotype. You can teach job work. They will get jobs in the various cities. I am afraid we neglect the girls. We pay attention to dressmaking. We have a graduate of the Drexel Institute and a careful woman. She has taught her pupils to do sewing of all kinds. I would be astonished at some of it if I did not know that they did this kind of work.

The deaf child can do anything any other child can do. We teach repairing and fine sewing. They can also cut and fit. One of our girls found she could use all of her time in making dresses for the ladies of our school. I believe dressmaking an excellent trade for our girls. They do not seem to want to work in the kitchen. They think it is menial. Our girls do not care much for the kitchen. Tailoring is a good trade. We do not put boys in there who are not good for anything else. We put in good boys, and they make good workmen. They get jobs. The trouble is that tailoring is divided up. You must teach the boy to make the different parts of the garment. He

can get a position and keep it unless he is deficient in his work. You must have good teachers. We are spending $10,000 a year in our trades department. We are going to keep abreast with the times. I believe the boys and girls who are well prepared will have no trouble in getting employment.

The meeting was then adjourned till 2 o'clock.

AFTERNOON SESSION.

The meeting was called to order at 10 minutes past 2 by the president.

Mr. Caldwell took the chair, and the work of the normal section was continued.

LANGUAGE WORK IN A PRIMARY ORAL CLASS.

[By Frances L. Glenn, Missouri.]

Language work in an oral class must run along on three distinct lines—speech, speech reading, and writing. Though each of the three accomplishments sought must be attained through a vast amount of drill along its own special line, the work must be so presented to the child that the result in him will be a harmonious whole. It is in the first year that the foundation of all his future education should be laid, and this first year's work should be such as so to strengthen and develop the mind as to render him capable of independent thought and research. The method employed in teaching language should be one calculated to actualize the knowledge gained and to render speech and writing a spontaneous expression of the child's natural mental activities, and one that will connect him with his environment and prepare him for the ever-increasing demands upon his mind's best forces.

That method which is best adapted to leading out the mind and rendering it capable of thinking in an orderly way, and of giving such accurate expression to thought that the child will in time learn to think orally, is the method that should become the keystone of the language structure.

In all essential features we believe that the system of language teaching used in the Missouri school, and explained in detail at the convention held in Flint, Mich., July, 1895, fulfills this purpose and makes language for the deaf child a part of his thinking life. It renders unnecessary the teaching of English in a long series of disconnected words and phrases,

and instead of finding it necessary to carry in his memory all the words of his vocabulary and the forms of sentences in which they can be correctly used, the child needs only to remember what we remember—the grammatical relation of words.

All language can be classified under four heads—verbs, adverbs, adjectives, and nouns—and this classification becomes the basis of thought. This classification is for years kept constantly before the child. The four divisions are placed on the large slates with the verb, the most important word in the

v.		adv.		a.			n.	
to walk,	walked	very	nicely	a	some	sick	boy	boys
				an				
to hop,			yesterday	the	few	well	ball	
to fall,	fell		here	one		red	top	
to throw,	threw		in —	two		small	man	men
			on —	three			teacher	
				etc.				
			under —					
did not —				— was —				
— is — ing				— is —				
— will —				— will be —				
etc.				etc.				

sentence, and its various tense forms written in the first space; the adverb, a modifier of the verb and adjective, in the second; the adjective in the third, and the noun in the fourth; the adjective as a modifier placed in close proximity to the noun. In the third or adjective column, below a horizontal line of separation, is placed also the verb "to be" with its various forms. It can readily be seen that with this arrangement the child will in time acquire a grammatical knowledge of the parts of speech.

This classification of words is not presented the first day of school; the pupil is led through successive steps to the place where he himself begins to feel his need of language. He is first taught the art of controlling his vocal organs in order that speech may be produced, and he is taught to write and to associate the spoken and written names of a few simple objects and actions with those objects and actions. When, after some weeks of careful drill, he has learned to do this with a good degree of ease, the classification of words begins. The four

divisions are made on the blackboard and words are written in their respective spaces—the infinitive, or the name of the action, in the verb slate; the noun, or the name of the object, in the fourth or noun slate.

At this time the use of the five columns also becomes necessary; that is, the first sentence is taught. The five columns are used in primary sentence construction, much as diagramming is used in the study of grammar. From the first, each person or object is correctly placed at the five slates, and then the sentence is written, the pupil carrying the required words and phrases, and the verb with its proper tense form over from the four slates, thus connecting the etymology and the syntax of our language.

Much care is given to the accurate analysis of sentences. The grammatical relation of the modifying words and phrases to the words modified, is carefully considered; for instance, in the sentences, "John put a ball on the table," and "A ball is on the table," the two phrases "on the table" are written in different spaces—the first phrase, as modifier of the verb "to put" is placed in the fifth column; the second phrase, as adverbial complement of the verb "to be" is placed in the second—and so on through all the niceties of analysis.

Who? What? (1)	was / is / will be — What? Where? (2)	Whom? What? (3)	to / at / for, etc. — Whom? What? (4)	When? Where? (5)
James	walked.		.....	on the table.
John	put	a ball	to Willie.....	yesterday.
A ball.....	is on the table.			
Clyde.....	gave.....	an apple ...		
Maggie	wants.....	a doll.		
Willie	wants.....	to play.		

This is an important feature in language teaching, for primary language, though simple and limited in its expression, includes all language, and the rules learned during the first five or six years as sight rules anticipate the study, in later years, of technical grammar.

In presenting the first sentence, a regular, intransitive verb is used, and opposite the infinitive form is written the past tense, with the instruction that this is the word we must write in the five-column division. The "ed" taught as the sign of

the past tense, is soon dropped from the verb slate, and only the past of irregular verbs is written. The child is early expected to know that the infinitive alone written means that the verb is regular; or, as he reasons, that "ed" is to be added. This emphasizes the fact that some verbs do not form their past tense by adding "ed." The past tense of irregular verbs is always written, regardless of the tense the child is to use in his sentence. Do not understand me as saying that each verb the child needs for each day's lesson is written for him; such is not the case. He is required to remember, if possible, the name of each verb given, and only after hopeless failure to recall the name of an action is the root form written to refresh his memory. The child is thrown upon his own resources, made to do his own thinking, and to carry the result of all he learns in his mind. No notebook is given him in which a record of each day's work is kept; the record of his work is in the storehouse of his mind, to be brought forth whenever and wherever needed.

This first year's sentence work becomes of inestimable value in the formation of the reading habit. Toward the close of the first school year the sentences given each day as the language lesson are printed in the daily lesson paper. This lesson paper is published each day for the use of classes covering the first five school years, and is made up of the language work for each day. These lessons are studied, and the lessons of other grades read, at the night study hour.

The first-year pupil does not study at night, but he is supplied with a lesson paper and is expected to read his own and other lessons—as far as his advancement will permit—and be ready to read them and to answer any question concerning them which the teacher, during the conversation period, may ask. In this way the child has the advantage of the language of his own grade, and of grades above and below his own. The frequent handling of this paper, the knowledge that his name may appear in it, and the pleasure of gleaning information concerning pupils in other classes, keeps the child reading and asking questions about that which is read; thus is begun in the first year the preliminary training for the use of books.

By the time the child has learned to write a few simpel sentences he is reaching the place in his articulation training where he can make an effort to speak as well as to write, and our first vocal expression of thought is gained. Before the

close of the first term of school he can give spoken expression to his thoughts with almost as much ease as he can written expression, and can read from the lips simple commands, and many of the sentence forms that are familiar to him in speech. He is also able to take new words from the lips because of the knowledge gained in his continuous drill in the elements of speech, a consideration of the details of which does not come within the scope of this paper.

At the close of this first school year he has an intelligent use of a generous vocabulary; he has an understanding of at least four tense forms of the verb, and the use, as modifying elements, of many adjectives and adverbs.

This, many may say, is the pouring in of information, rather than education; but bear in mind that it is only the framework of all this language we ask the child to remember. His vocabulary, considered as a language, or as something by which to measure his mental development, is of secondary importance. The great point aimed at is that he should know so perfectly that the rules which govern one verb govern all; that any new verb may be placed on the verb slate, and he understands, without a word of explanation, that it can undergo all the changes for tense that he saw in the first verb taught. This should be true of all the words in his vocabulary. The laws applicable to the known words of a certain class are also applicable to all possible words of that particular class. His understanding of language reaches forward as well as backward. He is enabled to apply the laws that govern the known to the unknown quantities.

All the words in the four slates are so arranged that the child sees them in their natural order of expression, and in speaking or writing he must make a distinct mental effort in order to transpose. In the adjective space the articles and numerals are in one column; adjectives of quantity—as "some," "few," "many," etc.—in a second; and descriptive adjectives in a third. In this way it becomes very easy for the child, constantly seeing, as we are constantly hearing them, to speak "a red top," "two small apples," "many pretty flowers," and other similar expressions.

By calling attention daily to the arrangement of words in the four slates, the child learns that adjectives must be used either with the verb "to be," or in connection with nouns—that they can never be carried back to the verb slate. Special care

is used in writing the forms of "to be." As each new tense is taught it is written in a column under the adjectives in such a way that with the greatest ease any one of the adjectives can be brought down to fill the blank at the right of the tense form. These tense forms are also written on a line with the forms of the verbs in the verb slate, so that "is" corresponds with "is —ing;" "will be," with "will;" "can be," with "can," and so on through all the auxiliary forms.

This same care is shown in placing the tense forms of the verbs directly under the root form, so that the child at a glance can see that the infinitive must complete the auxiliary forms. The sight and memory are aided in this rule of bringing the root form to the auxiliary spaces by an arrow pointing to the infinitive. This becomes a valuable aid in teaching the uses of the verb "to be." At first the arrow points to the adjectives, but later, when adverbial phrases have been introduced, another leads over to the adverb column, showing that adverbial phrases may be used with this verb. When another step in advance has been taken, and the noun complement taught, a third arrow is a silent reminder to the child that nouns also can be brought over and placed with the tense forms of "to be." These arrows remain on the slate though the words in the upper spaces are constantly changing, the idea being to keep the form, but not the vocabulary, before the child.

In placing new nouns on the slate the singular number is written to the left of the space, the plural at the right. After writing for a short time both the singular and the plural number of nouns whose plurals are regularly formed the "s" is dropped and only the plural of nouns whose plurals are irregular is written. This emphasizes the formation of the plural much as does the omission of "ed" of regular verbs emphasize the fact that all verbs in forming the past tense do not undergo the same change nor all nouns follow the same rule in forming the plural.

In this way the pupil has a number of sight rules kept constantly before him, and the law of association which is so strong with us all helps him to gain such an understanding of language that whatever he may wish to express, even though the particular words be unknown, he has the framework of the sentence so in mind that placing in the proper spaces the name of the new verb, noun, etc., enables the child to give either spoken or written expression to his thought.

This constant presence of language forms is of peculiar value in an oral class I have heard it said that the desire to speak is given the little deaf child by having him talk and by constantly talking with and to him. With this I agree. We can never have the child talk too much, nor, in the ordinary class room, talk as much as the ideal teaching requires, but with speech give the child the same kind of knowledge of language a hearing child has and the same living English in which to express his thoughts.

There is no reason why, with the system of language development thus hastily outlined, a deaf child should not speak with almost as much ease and as instinctively, so far as sentence construction is concerned, as the hearing child. He from babyhood hears language, and from constant repetition learns to understand and to speak it. The deaf child has language so placed before him that to a large degree his sight supplies the deficiency caused by his lack of hearing.

Day after day he sees on the slates the tense forms of verbs; he sees his teacher constantly speaking to him these same tense forms; in all his own language work he must constantly speak, write, and speech-read these same forms until they are so ingrained in his mind that they come forth in speech almost as naturally as does the language that sinks into the mind of the hearing child by means of sound repetition.

Language is not only our means of expressing thought, but the instrument of thinking. Of what great importance it is, then, that the deaf child have language in all its possible forms. This system of language teaching in an oral class makes education for the deaf child a logical sequence of subject and method. He sees language in its natural expression and in time must acquire, because of his speech and speech-reading, an intuitive comprehension of English and an easy use of the vernacular.

Speech must be so constantly used and so much depended upon as the natural way of expressing thought that long before his school course is finished he will have learned to think orally. This threefold use of language makes education for the deaf what it is for the hearing child—an order of development that is one of real progression, an order which has a beginning, a middle, and an end; and when that end is reached the result obtained by means of speech, speech-reading, and writing will be that much-talked-of "restoration to society"

which consists in the ready comprehension of the idioms of our language, the easy use of colloquial English, and an intelligent appreciation and enjoyment of all the riches of our literature.

Dr. Gallaudet then introduced two visitors, Mr. L. D. Bonebrake, commissioner of education of Ohio, and Hon. J. W. Sifton, inspector of public institutions of Manitoba.

ADDRESS OF L. D. BONEBRAKE, OHIO.

I was working a few moments ago upon a subject represented by two new statutes that we have in Ohio in relation to the education of the deaf and those who lack in speech.

I had occasion to telephone to my good friend, Superintendent Jones, for information, and I found him so well disposed that he felt that I ought to come out and meet you. I confess a certain strangeness when I realize that many of you must get my thought and talk by signs. I realize that your work is a specialty. I realize that our work is a specialty also. As a matter of fact, all education is a specialty. Education calls for a large endowment of good sense, large endowment of health and Christian graces, and in addition to that a special preparation for the work.

This State spends $14,000,000 to educate its boys and girls between the ages of 6 and 21. In addition to this we have the State institutions. We have institutions for the insane. We have a great many children's homes, one in almost every county. This institution for the deaf was founded, I believe, in 1859, and it was then the only building. It is now perhaps over thirty years since its foundation and its work began, and I think I can say without being charged with paying an empty compliment that it has never thrived so well as it has under the supervision and management of Superintendent Jones. [Applause.]

I am sure that the many years of training that he had as a student, teacher, and superintendent in the Ohio public schools have been an advantage to him as a preparation for this work. Your work and our work is the same. It is education. Any other work that you have to perform is only an emphasized part of the general work that we all perform.

As I have been traveling over this State for the past few weeks, visiting teachers' institutes, there has been a constant thought running through my mind. That thought has been

the power of one's personality in the schoolroom. I mean that superior spiritual power of which the teacher is the giver and the child is the recipient.

We can not value too highly a well-marked personality in the teacher. I think also of the age in which we live. What great names are being daily recorded in the history of the world. It has been said that the public school has a tendency to level downward. I think not. I think it levels upward. Instead of injuring and destroying powers it has a tendency to make a strong and noble character.

During our present century there have appeared stronger names representing stronger actions in art, in literature, in government, and in history than in any other age of the world. They have been giants in the department of life in which they have worked. I might name Tennyson, Lowell, Byron, Hugo, Gladstone, and Bismarck, as well as a host of others whose lives have made the world better for their having lived in it. It is the province of the school to seek out the child and to find out his range of possibility and to give him the opportunity to use these possibilities. Education seeks to open the eyes and ears of the child to the opportunities which lie before him. Education seeks to bring out the hidden part, the unknown quality. Education is intended to develop and to stimulate the child to his best efforts in life. That is the province of education, and it is the duty of the State to provide schools from the kindergarten to the university to give the children of the State the best opportunities for development. It is the province of education to give to the child a strong personality.

I was much interested while sitting on the platform and listening to the speech which was being interpreted in the sign language. I was struck with its facility. It seemed to me that the signs were living words. If we have pictures that are beautiful, it is these motions of the hand and face which give out these forms of emotion. I am glad to have the opportunity of seeing and meeting with this convention. I fully realize the importance of the great work in which you are engaged. Ohio welcomes you, and I am sure that your presence will be an influence for good.

In behalf of the 25,000 teachers of Ohio, whom I have the honor to represent, I bid you welcome. We are engaged in different departments only of the same great field of work. I wish you a pleasant and profitable session.

ADDRESS OF HON. J. W. SIFTON.

Ladies and Gentlemen: I hardly know why I should be called upon the platform. I was not here the other day, but I think my friend from Ontario said all that was necessary. I thank you for the privilege of coming and learning something of what you are doing, not only in the work for the deaf, but in other work.

I have the inspection of the various institutions of our country. The asylums and other institutions are under my charge. The government of the Province a short time ago came to the decision to take up another branch of business, and they put the work on me. The work is to rescue the unfortunate children. This work has been carried on in Ohio. I thought I would be able to get information valuable to me. I have already received some, and will no doubt receive more. Our object in the North is to keep up with you people of the South. I am pleased to hear the speech just delivered in regard to your educational work. The papers read this afternoon are very interesting to me. I think I have learned something from each one.

I was told that I would have only two or three minutes, and I want to keep to that time. I want to say that you have the entire sympathy of the Canadian people in your war for humanity's sake. [Applause.] You know there are some people who talk too much with their mouths. One of our morning papers came out and said a little on both sides. It said it would not mind to see the Americans thrashed a little. The other papers took it up, and it took that editor a whole week to explain and set himself right with the people. We hope your war will soon end, and that it will accomplish a great work.

I hope that we will feel more of that brotherly love and affection for each other than we have ever felt before.

Dr. GALLAUDET. I want to say that Americans will not be behind Canada, England, Scotland, and Ireland in standing up for the new alliance that is to make the Anglo-Saxon race the savior of the world.

ORAL WORK BY DEAF TEACHERS—MANUAL WORK BY ORAL TEACHERS.

[By Prof. Amos G. Draper, Gallaudet College, Washington, D. C.]

Of late years the number of deaf teachers employed in American schools for the deaf has decreased in proportion to

the whole number of teachers. It is not necessary for the purposes of this paper to consider whether this decrease is likely to continue or not. It is sufficient to say that in a country like the United States many influences will combine in favor of employing a certain number of deaf teachers. The best of these influences is that not infrequently principals of schools are convinced that certain deaf persons are better qualified to teach than any hearing persons they can obtain. So strong are the influences that unite in favor of employing some deaf teachers that such teachers have been and are now employed even in pure oral schools and in the oral branches of combined schools.

A few deaf teachers are only "hard of hearing," and their speech is normal. A greater number, though quite deaf, have clear and natural speech. Many others have speech, natural or acquired, of varying degrees of excellence. As a whole, it is probable that the majority of deaf teachers in America can and do use speech habitually when in the company of hearing persons.

The question then arises, What is the duty of these deaf teachers as to the use of speech in their intercourse with pupils? No matter what kind of class or in what kind of school they teach they will be constantly thrown, in or out of their schoolrooms, with pupils who have made a study of speech and lip reading and are wishful to improve therein. What is the deaf teacher's duty to such pupils? In my view there can be but one answer. He should endeavor to supplement the oral work of his school and to benefit those pupils by habitually using speech with them whenever and wherever speech will well serve the end in view. Perhaps my meaning can not be made clearer than by stating my practice. I am a deaf teacher. In my classes there are lip readers of every degree—poor, fair, good, and phenomenal. There are also students whose powers of lip reading do not extend beyond words and simple, everyday phrases. In addressing these classes as wholes, where economy of time, accuracy, and the general understanding of all as well as the particular understanding of each are the ends in view, I use the manual alphabet or writing. That time is sacred to learning and not to lip reading. Suppose the object is to get clearly before the united mind of the class the irrefragable truth of some geometrical proposition, or to magnify before them the manhood of Cicero and the miscreancy of Catiline—surely those lofty aims should

not be defeated or imperiled by devoting the time to practice in lip reading.

But when, by and by, a portion of the hour is given to individual instruction, I speak to those versed in lip reading, and persist, unless it appears that they quite fail to comprehend the subject in hand when it is put to them in that way. In that case I resort again to writing or spelling, because as aforesaid the paramount object of that hour is intellectual culture and not lip reading.

In meeting these students outside the recitation room I also address them by speech when practicable.

Now, such a course on the part of deaf teachers generally may indeed come under the head of extra work or duty, because of the uncertainties and limitations of lip reading in contrast with the clearness, freedom, and expressiveness of spelling or of signs. Nevertheless, it is evident that deaf teachers who adopt such a course will contribute to their own improvement in speech and lips reading, to the advance of that branch of the work of the schools in which they are employed, and, best of all, to the benefit of the pupils who are striving to improve in speech and lip reading.

Now, to the second part of my subject.

Of the total number of articulation teachers in our schools at present less than 30 per cent are employed in pure oral schools. Many of these do not know the manual alphabet or the sign language, and such as do know them are forbidden to use them by the theory of the schools in which they are employed.

The great majority of oral teachers, however, are at work in combined schools. Some of these, also, do not know the manual alphabet or the sign language. Indeed, I have known one of them, a man, to say, as if it were knowledge to be ashamed of, that "he did not know the manual alphabet, although he had sometimes practiced it in the privacy of his own apartment."

Now, the oral teacher in the pure oral school will meet, if not in then out of that school, deaf persons—children, youths, and adults—who are not, and never will be, lip readers. He will meet them singly or in bodies, and sometimes in circumstances that make lip reading impossible, even if they are accomplished in it.

On the other hand, the oral teachers in combined schools will meet such deaf persons every day in or about their schools.

Both classes of oral teachers will be meeting such deaf persons as long as they live, in the streets, in travel, in the meetings of the deaf, in the churches which are more and more tending to embrace the deaf in their works of love and comfort.

With regard to all oral teachers, then, the question arises just as incisively as the similiar question did to the deaf teachers, What is the oral teacher's duty to such deaf persons?

Of course the easiest answer for the oral teacher is to say that he will have nothing to do with such deaf persons—let them learn to lip read first. This is the attitude taken by not a few oral teachers. They resolutely refuse to communicate with even highly intelligent deaf persons except by lip reading.

If this spirit is right and praiseworthy no more need be said. But is it? Is it consistent with the spirit of love from which all truly s ccessful teaching draws its inspiration? Can a true teacher, in or out of school, deliberately turn away all the power and light and sweetness that is in him from the great majority of the class whom he has been chosen to lead for the single reason that they have not been or can not be subjected to his theories? He may say, Yes, I can; and I will have nothing to do with deaf persons who do not lip read; but my object is a good one, for I hope so to make them all lip read by and by. We must, however, deal with the facts of experience, and these prove, the world over, that such a hope is largely vain; for as soon as the deaf are free, no matter from what kind of school they are set free, they form or join assemblies and enter into friendships in which intercourse is carried on by the manual alphabet and the sign language. The graduates of pure oral schools do this. Years ago the managers of one of our pure oral schools declared that no reunion of its pupils should ever be held at the school if the manual alphabet or signs were to be used. The natural consequence is that no reunion has ever been held at the school.

The same spirit will bar the oral teacher who insists on pure oral practices regardless of circumstances from participation or service in the religious missions which are becoming more and more established among the deaf, and also from their social and literary assemblies. Such teachers may say, True, but these assemblies are a mischief anyway, and should be frowned upon. Here, again, from the broadly human and Christian standpoint, issue may be fairly joined with them. Suppose the deaf do meet now and then, and in

consequence some of them intermarry and some deaf children are born; what then? Is the sum of unhappiness in this world made greater by that fact than it would be by the rigid isolation of each of these deaf men and women, the starving of love and the stunting of sympathy? Scientists may say, Yes; but "men and brethren" will say, No.

The manual alphabet and the sign language are not strictly necessary to the oral teacher. To master them may come under the head of extra work or duty. But when the object sought is the benefit and happiness of the deaf as a whole, the duty seems clear. Let, then, the oral teacher be as purely oral as he deems best in his class room, but let him have at command and let him not refuse to employ other means of communication when these alone can serve the deaf for noble ends.

The teachers of the Hartford and Mount Airy schools, including some of the oral teachers in the latter, have for years given and do now give of the best that is in them in order to contribute to the elevation and happiness of the deaf at large by addressing them upon religious, social, or literary occasions in a language that all can understand. No doubt these labors cost them some effort, perhaps some sacrifice of theory. But is not their purpose a noble and helpful one? Is not their standpoint broad and humane? And is not their service such that all oral teachers well might emulate it?

DISCUSSION.

Dr. CROUTER. I wish to say a few words in regard to the first part of this paper. We have in connection with our oral department one deaf teacher. He is not wholly deaf, but his hearing does not assist him much in the class room. I would only say of his work that it is just as good from a purely oral standpoint as that of the hearing teacher. He is pre-eminently successful in his particular work, which is language work. I would not have him teach articulation or speech, but the teaching of language, arithmetic, or any other branch he can do with safety. I do not see why a competent deaf teacher should not be a successful one. I do not think our deaf teachers need have any fear because of oral schools. I think a similar number of deaf teachers will find employment in our schools. Last year we sent a number of pupils from the oral department to Washington.

I find that pupils sent to Washington a year ago have come

back, and they have not suffered in their speech, nor in their ability to read speech.

I wish to say, further, that I would not have much respect for the speech of an orally taught boy or girl who would permit it to deteriorate. One other thing I wish to mention, and that is that I am sorry that Professor Draper deems it necessary to criticise the methods or the spirit of the oral teachers.

There may be some oral teachers who do not know how to use the manual alphabet, and they may not want to learn how to use it. Personally, I have no sympathy with such a consideration. If they do not use the manual alphabet, it is because they think that their influence will therefore be stronger as oral teachers with their pupils. I think the time is rapidly passing when we, as teachers of the deaf, can afford to drop the spirit of criticism. Let us look upon our work in a broader and wider way. One teacher may prefer manual spelling, another may prefer signs, and another may prefer oral work alone. Let us look upon our work in a broad and liberal spirit.

Dr. GALLAUDET. I would not undertake to say without referring to the manuscript of Professor Draper that I think Dr. Crouter is hasty. I do not think Professor Draper criticises the spirit of oral teachers who in their class rooms decline to spell manually. My impression is that he expresses regret that they are not willing to use these means of expressing thought when others fail. I think Dr. Crouter is mistaken.

Mr. ARGO. I would like to ask Dr. Crouter if the year's attendance at Washington has had any effect upon the speech habit of the pupils from Mount Airy.

Dr. CROUTER. I have not been thrown very much with the boys and girls who went to Washington. They came out to visit the school on their return to their homes. Their teachers were naturally interested to discover whether their powers of speech and speech reading had been impaired. They tested them carefully, and found that there was little or no deterioration. Whether their speech habit has been affected I am not able definitely to say. I incline to think it has not, and even if it has, association with the hearing will soon restore it.

Dr. GALLAUDET. I want to say that all through the year it was a matter of great care on the part of the officers of the college at Washington that these pupils should lose none of their ability to speak or to read speech. We feel the friendliest

interest in all methods used for the education of the deaf. And it is our purpose to preserve and improve every power our students bring with them when they come to us. We think the means now in use at the college are sufficient to insure this result.

A SUGGESTION CONCERNING ADAPTED STORIES FOR THE DEAF.

[By G. M. Teegarden, Western Pennsylvania.]

"Books—gentle comrades; kind advisers; friends; comforts; treasures; helps." All this and more to the deaf when once they have learned to appreciate the value and usefulness of books.

It is not necessary to go into a long dissertation in support of the value of the reading habit to the deaf. This has long been accepted as absolutely essential. Nor is it obligatory to argue in defense of specially prepared or adapted stories, rendering them suitable for the deaf of average ability. The need and value of such reading is clearly demonstrated by the continued popularity and helpfulness of such books and stories as have already been published. They are no longer experiments. It has been shown that they are the lower steps—as important as the higher—in the ascent to a more elevated plane in habits of reading and consequent advancement of our pupils in and out of school.

The deaf must be trained to appreciate the usefulness of reading, and it is the duty of those in charge of their education to stimulate that appreciation by every means at their command. Stinting our pupils in the right sort of reading matter is wretched economy. Give them books—plenty of them—suitable to their comprehension and there must surely be improvement all along the line.

Much has been done in this direction by the publication of numerous excellent and instructive stories in Our Little Family Paper Circle, but they are not in a form to give them the greatest value. Books may be preserved, reread, and appreciated long after their appearance, while papers are usually cast aside and the contents are lost. At the same time those who have taken up the laborious task of preparing scrapbooks of the stories they find in the various papers will soon stop from sheer weariness. We all know, too, that often we do not appreciate a story at first reading and afterwards it becomes a favorite. In my own experience, pupils have fre-

quently expressed pleasure and delight in republished stories they had not read before or had forgotten. Thus it appears the value of such books is great, and the only requirement is to consider the means of providing them.

A vast amount of good material for making excellent books for a certain class of the deaf has been published in the institution papers. Much labor and care have been expended on them. It seems a pity to let them go to waste. It is much like collecting the sheaves of golden grain while the sun shineth and leaving them to rot on the ground for want of a garner. These stories should be gathered up and preserved. They are helps that can not be slighted. This work, too, should be done at once while so many in the profession are eager to write that their pupils may read, for the time must come when such general production will cease, and if the stories are not collected in some form for preservation they will be lost.

Would it not be well for this convention to appoint a committee to take charge of the matter? The committee might be empowered to collect, arrange, and publish in book form the stories and sketches that have been and are being printed in the various school papers. There is sufficient material to make two or three small volumes, classified according to grade.

This work would be greatly simplified and advanced if it could be ascertained that any of the authors of the stories intend to publish their own in book form, as has been done at the Western Pennsylvania Institution, or if the authors of the various stories would collect, revise, and forward them to the committee in charge.

One thing in connection with books of this character; they should be cheap—not cheap in contents and execution, but issued at the least possible expense, so that they may come more readily into the hands of those most in need of them and be so much more useful. If the work could be done at some institution where they have facilities for printing and binding, and at cost, it would be a gain to the deaf everywhere.

In conclusion, I am perfectly aware that much labor and responsibility are involved in this work, and those who consent to undertake it should be compensated to some extent and at the same time have the earnest support and cooperation of all in the profession who are truly laboring for the advancement of the deaf.

WHAT VALUE HAVE STORIES IN THE TEACHING OF LANGUAGE?

[By Job Williams, Hartford, Conn.]

There has been a great deal of discussion as to the use of stories in teaching language to the deaf. On the one hand they have been considered almost invaluable, and, on the other hand, they have been pronounced nearly useless. It has been claimed that actions meet all the conditions furnished by stories and better serve the purpose. Let us see.

Actions are very useful, it is true. The pupil sees just what is done and understands clearly what is to be expressed in language. To describe the action in language is just the way the hearing child learns language. The action and the description of it are associated in the child's memory. The action recalls the written or spoken expression of it, and vice versa. It is a very valuable exercise within its limitations, but its limits are soon reached, and if the language work of a young class be confined to action description it will be kept within a very narrow channel. The domestic animals, a complete menagerie, birds, reptiles, mountains, valleys, ponds, oceans, etc., can hardly be brought into the schoolroom for action description, but they may be freely used in stories.

One of the chief elements of success in teaching is to secure the interest of the pupil. Nowhere is this more true than in the teaching of language. A good story with a point to it will always secure close attention and interest.

Under the head of stories I would include the incidents and accidents of daily life and the items of news that children are interested in. It is largely through such means that the hearing child learns language. A runaway accident is described in the morning paper. It is reported at the breakfast table. The children are all attention at once, transformed into animated interrogation points. Questions come thick and fast. Where did it happen? When? Was anybody in the wagon? Was he hurt? Will he die? What made the horse run away? and so on ad infinitum. With every reply the child is learning how to express an idea properly in language.

Now, this is one way in which stories may be very useful in teaching language to deaf children. A story is told or read in very simple language, adapted to the comprehension of the child at that stage of his progress. His interest is secured and his attention riveted. It gives something definite for conversation between teacher and pupil. In every question given by

the teacher she is giving language, and in every answer she gives to a question she is doing the same thing, while the pupil, through his interest in the story, is learning in a way that will make him remember them, the correct forms for asking and answering questions. The answers give just the forms of sentences that are needed in narration. A correct page of narration or description is but a page of correct sentences.

Again, the imagination of a child is the most active thing about him. From it he derives a large part of the pleasure he takes in play. In imagination he is a policeman or a soldier, a king or a beggar, a horse or a steam engine, as the case may be. There are interest and pleasure. Why not make use of this faculty in the instruction of the child? You can not teach him much unless you excite his interest and hold his attention. That can be done very successfully in the skillful use of stories. They form an excellent preparation for the study of history, and the latter should more and more supersede the former as the class advances.

But stories are not simply a means of teaching language. They may be the means of stimulating thought and of conveying much information also. Questions should be so framed as to call for thought on the part of the pupil. That means that the teacher should thoughtfully prepare the questions. More or less of them should be asked the answers to which can only be inferred from the text of the story. Several years ago I put into the hands of a teacher of long experience among the deaf a copy of Miss Sweet's First Lessons in English for examination and criticism. I was surprised at one criticism he made after looking it over. Turning to the questions on one of the stories, he said: "There; that question should not be asked a deaf child; it is not answered in the text of the story." No; it was not; and that was the very reason why that particular question was asked. It was intended to make the pupil do a little thinking for himself. Now and then it is well to ask a question to which the answer can not even be inferred from the text of the story. If the pupil can be brought to the point where he will see that and answer frankly "I do not know," he has taken a step in the right direction.

Stories may furnish the basis for conveying a great deal of information. Almost any story will furnish one or more subjects on which the teacher can enlarge, and which the pupils will follow with unflagging interest, if brightly presented. Let me illustrate by a class exercise which I had copied. The

story on which the following questions were asked may be found on pages 113–118 of Miss Sweet's First Lessons in English, No. 4. It had been read by her class, which was near the end of its fourth year in school. This was the manner of questioning them:

TEACHER. The story is about a family who went to the White Mountains.

1. Do you know where the White Mountains are?
2. Can you show them on the map?
3. Did Mr. Warren go?
4. Why? What does "take charge of" mean?
5. How many persons were in the party?
6. What were their names?
7. Why did Uncle Fred go?
8. What relation was Bertram to Robert?
9. What relation was Alice to Mrs. Warren?
10. What relation was Robert to Alice?
11. What relation were Robert and Bertram to Mrs. W.?
12. What relation was Robert to Fred?
13. How did Uncle Fred go to the depot?
14. Do we have horse cars now?
15. What kind of cars do we have?
16. What makes trolley cars go?
17. What else is electricity used for?
18. How did the others go to the depot?
19. What other word can we use for depot?
20. What three things did Uncle Fred carry?
21. How did he carry his umbrella? Show me.
22. What does baggage mean?
23. Who checked the trunks for Uncle Fred?
24. Why do we check our trunks?
25. Who sold the tickets?
26. What car did the Warrens go into?
27. What is a drawing-room?
28. Did you ever ride in a sleeping car?
29. Why was Bertram frightened?
30. How old was Bertram?
31. How much older was Robert than Bertram?
32. Had Bertram ever been on a train before?
33. How did his Aunt Alice amuse him?
34. How did she amuse Robert when he got tired?
35. What was the ball made of?
36. Where does rubber come from?
37. Why could Robert not walk steadily?
38. Show how Robert and the little girl played ball?
39. What did the children do to amuse themselves at the mountains?
40. Who taught Robert to fish?
41. What kind of fish did he catch? (Talk about trout and other kinds of fish.)
42. How did the children look when they reached home?

Another argument in favor of the use of stories is that they furnish practice in just the sort of language that is used in every-day life, an every-day vocabulary, and every day they lead into a new range of thought and bring up new subjects for discussion. The story of to-day should no more be modeled on the story of yesterday than the editorial of to-day should furnish the model of to-morrow's editorial. Not imitation, but thought and growing power of expression is what is wanted.

The moral quality of certain courses of action, and the wisdom or unwisdom, or the good judgment or the lack of it, in certain other courses of action, may be brought out clearly in stories.

Stories should be told frequently to be reproduced in writing. They furnish opportunities for teaching a great many idioms, phrases, and forms of expression with which the pupil is unfamiliar, and they give definite ideas for the pupil to express in written language. He is not left to flounder about trying to express an idea which is all fog in his own mind. It is enough to require a deaf child to express in written language an idea which he fully comprehends.

Do not ask him to put into language an idea which he does not possess.

I do not believe that one who makes a proper use of stories will ever find them useless. If the teacher is wooden the class will be wooden and their work wooden whatever their work may be. Interest and animation on the part of the teacher will inspire the same qualities in the pupils.

DISCUSSION.

Dr. CROUTER. I would like to say a word on Dr. Williams's paper. Stories are good, and we use stories in all departments. They are useful in cultivating the imagination of the pupils. In regard to this point I have been conducting an experiment with my own little girl, just 2 years of age. I have been telling her stories. I got her 4 story books and she knows all the stories in them. She can tell the story of each picture.

Miss EFFIE JOHNSTON. I have a plan of developing a story. Pupils are always interested in things they know nothing about. They are much more interested if you tell them parts of the story than if you tell them all of it. Sometimes I read the leading sentences in the story. They besiege me with questions. They can ask the question in connected language.

I answer the question. My answer leads to the next question. We develop the story then together. Then they go to their seats and write the story. I think if we used more questions it would be better. The children would be better off. They would learn more by this plan.

Mr. BLEDSOE. In my teaching I sometimes have the children try to write original stories. They are not written in the natural order in which the events occur. What is the remedy?

Mr. BOOTH. I sometimes give them catch words. That gives them the order of the story. They almost invariably fall in the right order. The current of thought is directed by the catch words. I think this will be found a good remedy for the difficulty spoken of by Mr. Bledsoe.

Dr. FAY. Would it not be a good plan for the teacher to rewrite the story correctly?

Dr. WILLIAMS. Several years ago a teacher was working with a class. After several weeks she wanted to give a book to the pupil. I said, "What are you going to do with it?" and she said, "I must print the words now or the children will have difficulty in learning to read." I said to her, "I want you to write words and not to print them." She did not believe in that process, but she followed my suggestions. After a few weeks she found that the children understood the script as easily as they understood the printed letters. She was rather surprised at the result of my suggestion. Last year we had a similar experience with the same result.

Mr. Caldwell announced the Sunday song service, and Dr. Gallaudet read the following telegram from Professor Porter:

NANTUCKET, MASS., *July 30, 1898.*

Dr. E. M. GALLAUDET, *President*, and
Mr. J. R. DOBYNS, *Secretary*,
Institution for the Deaf, Columbus, Ohio:

Please signify to the convention my sincere thanks for their kind message and my confident hope that their proceedings will have been harmonious and fruitful of good, and that individually they may have abundant experience of the blessing vouchsafed to those who love their fellow-men.

SAMUEL PORTER.

The president also announced that Ginn & Co. had an exhibit of schoolbooks to present. The meeting then adjourned.

FOURTH DAY.

SUNDAY, *July 31.*

In the morning at half past 10, Dr. Gallaudet lectured in the chapel. His subject was "Childlike manliness." He was assisted in conducting services by the Rev. Mr. Cloud, of St. Louis; Mr. Vail, of Indiana; Rev. Job Turner, of Virginia, and Mr. J. L. Smith, of Minnesota. Mr. Balis rendered a hymn in the language of signs.

At the close of the service a collection was taken up for the benefit of the Ohio Home for Aged and Infirm Deaf.

In the afternoon a song service was held, led by Mr. McDermid. The meeting was opened with prayer by Dr. DeMotte. An interesting programme was carried out, consisting of selections by an orchestra, hymns by the congregation, and answers to questions on topics connected with the moral and religious training of the deaf. Miss Schenck sang "The Holy City" very feelingly, and hymns were recited in the language of signs by Mrs. Kearney and Mr. Balis.

In the evening the members of the convention gathered on the veranda and spent a very enjoyable hour in singing the old familiar hymns.

FIFTH DAY.

MORNING SESSION.

MONDAY, *August 1.*

The meeting was called to order by the president at 10 minutes past 9. Prayer was offered by the Rev. Mr. Eagleson.

The minutes of the session of July 30 and the proceedings of July 31 were read, amended, and adopted.

The secretary read the following telegrams from Mr. Dudley and Dr. Gillett, expressing their best wishes for the convention:

COLORADO SPRINGS, COLO., *July 30.*

Dr. E. M. GALLAUDET,
School for Deaf:

Thank the brethren for their kind sentiments. May the Lord's richest blessings attend you in your labors.

D. C. DUDLEY.

JACKSONVILLE, ILL., *July 30, 1898.*

E. M. GALLAUDET, *President,* or
J. R. DOBYNS, *Secretary,*
Convention American Instructors of the Deaf,
Care Institution for the Deaf and Dumb, Columbus, Ohio:

Many thanks for kind remembrance. Please express to the members of the convention my earnest wishes that they may be successful in their good work, and in the midst of all have the blessing of our Father above. My health is improving, and I hope to be at my work again in a short time and meet the workers in this good cause. May God bless you all.

PHILIP G. GILLETT.

He also read letters from Governor Pingree, of Michigan, and Mayor Maybury, of Detroit, urging the selection of Detroit as the place of the next meeting. These were referred to the executive committee. Dr. Fay then read the following list of names proposed for honorary membership:

Hon. George Hamilton, East Liverpool, Ohio.
Hon. William A. Gipson, Upper Sandusky, Ohio.
Hon. William L. McElroy, Mount Vernon, Ohio.
Hon. G. W. Glover, Cadiz, Ohio.
Miss L. B. Gipson, Upper Sandusky, Ohio.
Amasa Pratt, Columbus, Ohio.
Rev. W. S. Eagleson, Columbus, Ohio.
Hon. L. D. Bonebrake, Columbus, Ohio.

Mrs. Robert Patterson, Columbus, Ohio.
Mrs. L. A. Odebrecht, Columbus, Ohio.
Mrs. R. P. McGregor, Columbus, Ohio.
Mrs. B. Talbot, Columbus, Ohio.
Mrs. A. B. Greener, Columbus, Ohio.
Mrs. A. H. Schory, Columbus, Ohio.
Mrs. R. H. Atwood, Columbus, Ohio.
Mrs. James M. Steward, Columbus, Ohio.
Hon. Charles E. Haugh, Indianapolis, Ind.
Hon. G. A. Joiner, Alabama.
Hon. J. W. Sifton, Manitoba.
Rev. Job Turner, Staunton, Va.
Rev. A. W. Mann, Gambier, Ohio.
Rev. J. M. Koehler, Philadelphia, Pa.
Rev. O. J. Whildin, Baltimore, Md.
W. H. Addison, Glasgow, Scotland.
G. S. Haycock, Glasgow, Scotland.
J. A. Tillinghast, Belfast, Ireland.
T. C. Forester, Belfast, Ireland.
Miss Beatrice Condon, Ealing, London, England.
Dr. J. L. Noyes, Faribault, Minn.
Dr. P. G. Gillett, Jacksonville, Ill.
Dr. Isaac Lewis Peet, New York.
W. W. Wade, Oak, Mont.
S. T. Walker, Chicago, Ill.
George W. Halse, Columbus, Ohio.
Miss Mary E. Grow, Pomeroy, Ohio.
Alex. L. Pach, Easton, Pa.

These persons were elected, and the chair called for other names. Superintendent Jones announced the arrival of Ginn & Co.'s exhibit, and invited members to a reception Tuesday evening to be given by the heads of the schools for the deaf, blind, and other institutions.

Mr. Argo presented the following resolution:

Resolved, That beginning Tuesday morning the first twenty-five minutes of each session be set apart for the Question Box and the last forty-five minutes for the discussion of papers: *Provided*, That should the time be not fully taken up, the reading of papers be continued until the close of the session.

This was adopted.

Dr. Williams presented the following resolution:

Resolved, That the standing executive committee be authorized to incur expenses, at their discretion, for the purpose of promoting the cause of the education of the deaf and the interests of schools for the deaf, in accordance with the policy set forth in the constitution of the convention.

Mr. Clarke spoke in favor of it, showing the great need of putting the committee in a position to send an expert delegate, in case of difficulties in institutions, to influence the decision of investigating boards. The resolution was adopted.

Dr. Gallaudet called attention to the business meeting in the evening, in which only active members could participate. He then called on Dr. Gordon, chairman of the oral section, to take the chair. Dr. Gordon introduced his section by a short address.

ORAL SECTION.

Dr. GORDON. I came here quite full of what I wanted to talk about, but I am reminded of our limited time. I shall not attempt to make the remarks that I intended to make. I wish to congratulate you upon the progress in this branch of our work. We are all deeply interested in it. I congratulate you on the state of feeling that the extension of this work has been more and more appreciated. I am indeed glad to know the improved conditions on every hand. I am glad to note the improvement in every institution in our land in regard to oral teaching. It may be that there are some that I do not know of that have not made so much improvement, but I think it is well for us to look on the bright side of things. It is true that there is much that might be criticised and that is very far from satisfactory to us. I am reminded of a story of a church congregation who had assembled for worship. There happened to be visitors present, and some of the congregation sang through their noses, and some of them sang too high, so upon the whole the work was not creditable, and the service was ridiculed by these people who were there. There was one quiet woman who did not take part in the criticisms, but she happened to know that hymn which the congregation was trying to sing. She commenced to sing with that congregation, and her voice grew stronger every minute. Soon that voice was leading the congregation, and the singing was beautiful and all were delighted with the service.

A paper on oral teaching, by Mr. Gregory, of Wisconsin, was presented to the convention. Owing to its length and numerous technicalities it was referred to the secretary to be printed.

The following paper was then read:

EXPEDIENTS EMPLOYED IN GETTING PUPILS TO PRODUCE DISTINCT "K" AND "G" SOUNDS.

[By Miss M. L. Geer, Hartford, Conn.]

Considering the weakness of the muscles of the back of the tongue to be the prime difficulty to be met in teaching *k* and *g* to small children, my first aim is to strengthen these muscles.

With this object in view I have found a system of tongue gymnastics to be of great assistance. Pushing the tongue out slowly and drawing it back quickly; pushing it out slowly and

drawing it back slowly; pushing it out slowly and drawing it back into itself, taking positions for *p*, *t*, *ch*, and *k*. These are given as preparatory to the teaching of *k* and some days before the sound is to be taught. Like all other exercises of the kind, these are taken by the class in unison, following carefully and accurately each position taken by the teacher.

My attention has been repeatedly called to the peculiar high and narrow formation of the hard palate of many of the congenitally deaf children. It is in these cases in which the muscles are called upon to do extra work in order to adjust themselves to these conditions that I have found the greatest difficulty in getting a perfect *k*.

A diagram of the head on the wall slate showing the position of the tongue for *k* I have found useful. If the child makes the sound too far front or too far back, I show him by the use of the diagram his wrong position and call his attention to the correct position.

Teaching *k* by analogy from *p* and *t* I find in most cases to be the most successful method.

Let the child repeat after you *p*, *t*, *ch*, *k*, holding his finger between your own thumb and finger and indicating the contact of the articulate organs by the pressure of the thumb and finger, moving the pressure along the finger to show the different points of contact. I have sometimes found it a saving of time to give the child a hand glass and let him work this out himself, repeating *p*, *t*, *ch*, *k* for some minutes.

If the child persists in making a *k* too far front, I make use of the manipulator or the child's own finger to push the tongue back into position.

To correct this, if it is a persistent habit in combination, I use drill work on combinations of *k* with the back vowels; if too far back, drill with the combinations of *k* with the front vowels is used.

The difficulty in teaching *g* arises only when *g* is final, and in that position becomes the most difficult sound to get with any degree of perfection.

Taught first as a voice hold in contrast with final *k* as voiceless seems to me to be the easiest way to make the difference clear to a small child. Later, as his mental development goes on and his vocal organs are more under his control, I teach him that after the voice hold there is a slight expulsion of breath like a small *k*, representing it to him by a *g*, followed

by a small *k* (g_k), or by drawing a line perpendicularly through the *g*, showing that voice is given only during part of the *g*, and that the last half is breath.

I spend considerable time in trying to make the mechanical formation of the sound clear to the child's mind, and then resort to continued drill in lists of words contrasting final *k* and *g*.

Personal work and close application on the part of the pupil together with continuous drill I have found to be the only means to a satisfactory final *g*.

DISCUSSION.

Miss ALLEN. I want to say just a word in regard to the paper. I used to have some difficulty in regard to the *k* sound. Experienced teachers would say, "Oh, that is all simple enough; just develop *k* front." But no one in those days told me exactly how to do this. Later I learned. When the child gets a perfect *t*—observe, intelligently forms a perfect *t*—then, with whatever the instructor is using as a manipulator (a physician's ordinary metal tongue depressor is the best I have ever found), let him hold down the front of the tongue and tell the pupil to say *t*. The result of such an attempt is a correctly formed *k*. Have the child repeat this over and over until he realizes by the sense of touch the contact of the back of the tongue with the soft palate. This point gained, he soon forms *k* without the aid of the manipulator.

Mr. ADDISON. I want to ask the lady whether that always results favorably. I have tried it, and sometimes I succeed and sometimes I fail.

Miss ALLEN. I have never found an exception. I tried it on a little hearing child, and it worked all right. I think there is no instance in which if the letter *t* is well made but that the letter *k* will be all right. If the letter *t* is not well made, then I think the letter *k* will be a failure also.

Miss Donald was then asked to take the platform with her blind deaf pupil, Linnie Haguewood.

Miss Donald addressed the convention as follows:

ADDRESS OF MISS DONALD.

My experience in the education of the blind and deaf has been entirely with Linnie. I have read some accounts of others, and so have you, but I can speak personally of her.

She came to Vinton, Iowa, five years ago, and was then 14 years of age. She had been taught to use the alphabet two years before. Until 12 years of age she had been in her home with the usual instruction. During the two years of use of the alphabet at home she had learned 400 name words. She was put into my primary class. I gave her work just the same as the other children. She did well, and in a short time she was the best in the school. A local editor by the name of Murphy became interested in this child and raised the funds to provide her with a special teacher. We have been together three years. I have read everything I could find on teaching the blind deaf, and use the old methods as far as possible. I consider her as a natural child, and try to forget that she is deaf and blind. I try to reach her senses and talk to her about everything. It was very hard work the first year. I had to give her language to express her thoughts. She can sew on a machine and she crochets very well.

She lost her sight at 18 months of age. I began teaching her by having her feel my face, and I then took up the letter *a*. I placed her mouth in the proper position, and she made a sound something like *a*. She learned very rapidly. Some of the sounds came easily, and others with difficulty. She will sometimes forget sounds after learning them.

I found the combination of vowels and consonants very slow work. She finds that other people can understand her voice. She is constantly improving. She will not hesitate to do any kind of work. She remembers signs and letters. I use her voice when we are alone.

(The teacher then gave a very instructive exhibition of the powers of this blind deaf girl in the use of spoken language.)

Mr. F. D. CLARK. It was my good fortune to spend a week with Miss Donald and Linnie. When I first met Linnie I was a little disappointed. I was used to Helen Keller, and the lightning-like rapidity with which she answers questions. When I first met her Miss Donald was absent from the room; I introduced myself, and she smiled in a very interesting manner. I did not then know who she was. I spoke, but she did not reply. After a while she began to spell and we had quite a conversation. I think she compares very favorably with other deaf children. I think Miss Donald has cause to be proud of what she has done for this poor girl. I think that you will agree that if a congenitally deaf child had been

put in school and made this progress we would call it very good.

The father of this girl was a very kind man and he saw that all her wants were gratified. She went to the table and ate everything placed before her. I am informed that when Miss Donald took this child she did not want to walk. There has gone abroad the idea that there is a sort of mystery about the teaching of these blind deaf children, and that there was only one place where it could be done and that was at Boston. I know blind deaf children who have grown up in ignorance because of this belief. I will not take away any credit from a teacher or speak lightly of the difficulties of such work or the patience and self-denial required on the part of the teachers of these children, but I want to say that I hope that whenever there is one of these children that God has placed some kind-hearted woman like Miss Donald to take up the work. I trust also that there will be found a Murphy who will see that the means are not lacking for this work. I honor the State of Ohio because she has placed a law upon her statutes making such instruction possible for the children.

Mr. WADE. Ladies and Gentlemen, I do not want to make a speech, but I have taken an interest in the work of Helen Keller. Here was a girl in the State of Ohio in the institution for the blind. She was a bright pupil, but she became deaf. Her father had become attracted by Helen Keller and wanted to see if something could not be done. They thought she was too old. She was 15 years of age. I have taken an interest in the case. My view is that it requires patience and observation to do this work. I think it can be done. I know some people think it is a great mystery, but I do not think so. I think it is time we should quit talking about miracles and all that sort of thing. These children can be taught if you have the patience to do it.

Mr. CONNOR. I wish we had more men like Mr. Wade. I think all our people ought to know Mr. Wade and his work for the deaf blind.

I happen to know him and of his work, and his work is partially known to the people. He is looking around after these people and making inquiries in regard to them. He is doing good work in all directions but lets no one know it. I hope we shall always have him at our meetings.

Dr. CROUTER. I would like to ask whether it is more desir-

able to carry on the education of these children in an institution for the blind or the deaf. I have always referred them to the blind institutions.

Dr. WILLIAMS. I had an experience thirteen years ago with a student who came to our school. He was 12 years old, and made fine progress. He used the English language with more correctness and fluency than a majority of the congenitally deaf who were in our schools. I was satisfied with the progress that he made. I believe that during the latter part of his course, if he had been sent to a school for the blind, with their facilities, he would have done better. I believe that a school for the deaf is the best place to start them, and then they should be transferred to a school for the blind.

Mr. F. D. CLARKE. I think, like Dr. Williams, that it is best for them to begin in our schools. They want language, and they get that from the other children. After awhile, then, you can send them to a school for the blind and let them finish their education there.

Dr. WILKINSON. This is a question that has interested me a good deal. It is a question with me whether they want to go to an institution at all. That is my difficulty to settle. It has been said here that almost anybody of bright intelligence could take children like these and teach them. I think she would be better prepared if she had a preparation in the school. I am in a little of a quandary about this matter. I had a girl that came in two years ago blind and very deaf. Of course you could communicate to her by speaking in her ear. Her speech was not perfect, but you could understand it. I employed a special teacher for her. She made good progress that year. I was in a great quandary whether her education should not be conducted at home.

I am not inclined to get people into the institution when they should not be there. My idea is that the more you can get these blind deaf people to mingle with people in normal conditions the better.

I have sent her home and supplied her parents with books and apparatus. I shall watch the result of that year at home.

Dr. GALLAUDET. Did the teacher go with her?

Dr. WILKINSON. No, sir.

Mr. WALKER. I am not one of the wise men of this convention, and do not claim to be, but I have had experience in both plans. I think a blind and deaf child's place is in a blind

institution. If you can get deaf blind children to a certain point where they can read they will make good progress. I think we must have a special teacher for these children. If you put them into a blind school they learn by talking with these blind children, whose language is much better than that of deaf children. I think that is the proper place for them.

The following paper was then read by Miss Condon, of England:

PURE ORALISM IN ENGLAND.

[By Miss Beatrice Condon, London.]

Mr. President and Friends of the Deaf: May I preface my remarks by saying how pleased I am to have been enabled to meet this convention of American friends and instructors of the deaf, to which latter I extend my hearty sympathy and appreciation of their decidedly trying, but deeply interesting, work? My own sympathy with the deaf and desire to help in the forwarding of their interests is, I think, sufficiently proved by my having crossed that mill pond, the Atlantic, alone, without friend or even acquaintance to greet me on this side of the world, until I landed in the hospitable Ohio institution and came to receive the kind care of Mr. and Mrs. Jones.

Further, may I crave your indulgence and pardon if, in these few remarks, I refer largely to my own personal experience? It is obvious that what we have tried for ourselves, and the results we have seen with our own eyes and heard with our own ears, impress us more strongly than anything we may read or hear at second hand.

I feel that I am somewhat audacious in venturing to address such a company of people, many of whom have had twice as much experience as I have, but I trust, nevertheless, that I may succeed in interesting you in the affairs of the deaf as they are progressing in the old country, and in my own experience of the pure oral system.

I have frequently been asked by casual acquaintances and friends, "What induced you to take up the education of the deaf?" And, perhaps, it may interest some of our friends here to-day to know the answer. It was just the interest I felt on seeing for the first time the results of the pure oral system. A newspaper article first directed my attention to the system, and, in consequence, I went to see the Ealing school. I was surprised with and deeply interested in what I saw there, and

I could not but perceive how such a system, widely applied and energetically pursued, might revolutionize the deaf world. In short, I became a student and, in time, a trained teacher on the pure oral system.

In due course I was called upon to put in practice the theory I had learned and to test the value of its principles by personal, unaided experience. After the passing of the act of the compulsory education of the deaf I was offered the post of mistress of the deaf department to be opened in connection with a large upper-grade board school in a poor and populous district of a manufacturing town of England. I had at first but one untrained assistant and at the end of the first week I had some fifteen boys and girls, boys largely preponderating, ranging in age from 4 to 15. A few only of these had ever been inside a school or held a pencil in their hands, and of that number were two semideaf, semimute.

Of all these children there was but one whom I did not start teaching orally. He had been to a so-called combined system institution for several years, where he had learned by means of signs and manual alphabet. He was now 15 years of age, and thus he had only one year left at school. This boy's education I carried on entirely by writing, as, of course, I did not wish to begin using any method except the oral one. This boy did not become deaf until the age of 7 or 8, and I have been told had remnants of speech when he went to the institution where, for want of oral teaching, he had become silent. That he appreciated the value of the training he had unfortunately missed, but which he saw being bestowed on his younger companions, was shown by his asking me one day in the note he had to write me every day (as an aid to developing correct and idiomatic language), "Why was I not sent to you when I was a little boy, that I might learn to speak?" Of course, it was not convenient for us to enter upon a discussion of systems and his old institution, so I merely replied, "I was not teaching when you were a little boy," which was perfectly true, and quite satisfied him.

That the pure oral system can and does, when properly applied, develop the intellect as rapidly as or more so than any other system, was proved to my satisfaction by my own experience. One of the boys, aged 10, who came to school a perfect little savage, and at first gazed at pens and pencils with astonishment not unmixed with awe, at the end of four or five

months handed me an addition sum correctly done, although I had taught him no arithmetic as yet. He had only seen the semideaf class doing sums with me on the blackboard. A further proof, if necessary, was found in another pupil, an exceedingly dull girl of 13—a girl who never gave me any trouble, for she was truly too dull to be naughty, I believe. This girl had been going to the ordinary board school for years, where they had not even succeeded in teaching her to write the letters of the alphabet. She was afflicted with some nervous affection—could not hold her hand steady, and shook her head in a most curious way. The exercises necessary to bring out the voice, by making her stand erect and breathe properly, so improved her health that the nervous twitching almost disappeared. She learned to write legibly, to speak audibly and understandably—answering questions as to her name and age, etc., readily, and further to lip read addition and subtraction sums; do them mentally, and give the correct answers in speech. This was the result of two years' pure oral work, and I hope it may encourage oral teachers present, for no one could be more discouraged than I was with that pupil at times, but I was rewarded when I quitted the post by a most grateful letter from her parents, which I shall always keep.

That my material was unpromising you have already seen, but it may amuse some of the teachers to hear the following incident: At first the children could not understand having to stop a certain length of time in school. They would take their caps and try to make off when they were tired. The first time I had to insist upon a great hulking lad of 12 staying in school when his inclinations were to go and play he promptly took off his coat and up with his fists to fight me. I was so tickled at the notion of having to fight one of my scholars for the privilege of keeping him in school that I burst out laughing. The amusement was quickly reflected by the other children, and he went back to his place astonished at this novel reception of his prowess and much mortified at his failure.

The physical benefit to be derived from the continual use of the lungs necessitated by the pure oral system is greatly insisted upon by medical men, and I would like to read you an extract from a lecture given by Dr. Symes Thompson (one of the most prominent members of that profession in London) given before the members of the Union of Teachers of the

Deaf on the pure oral system: "I prepared a paper which was read in 1880 at the Milan International Conference of the Deaf. In that paper I brought evidence to prove that the health and life of the deaf-mutes were generally less satisfactory than that of the deaf taught to speak on the oral system. * * * When physician to out-patients at the Brompton Hospital for Consumption, a considerable number of deaf-mutes fell under my observation in whom the chronic affection of the bronchial tubes was found to be closely allied to that met with among millers, stone masons, and others engaged in dusty occupations. * * * All these deaf-mutes, and I have not met with similar cases among those instructed on the pure oral system," and he goes on to explain the reasons for this difference, which are obvious to everyone who considers the subject. Here let me point out that physically the system is as beneficial to the less successful pupils as to those who are brilliant examples of the possible results of the system, and this consideration ought surely to bear its weight in inducing us to give all pupils, if possible, the benefits of oral training.

Now, many of our friends say, "Why not use a portion of two systems?" Well, I should think a parallel case would be to start a hearing child on two absolutely new foreign languages at once—say, French and Russian. What would be the result? Russian being the more difficult would quickly go to the wall, and at the end of two years the child would know twice as much French as Russian. It is the same with these two systems. Teach a child orally, and when he is grown he can easily acquire the manual alphabet if he wishes. Teach him by signs and the manual alphabet, and when he is grown he is tied to that means of communication for the rest of his life. Therefore, I say, teach every child orally, and if you begin early enough every deaf child can be taught orally who has normal mental powers, and leave him to acquire other means of expression, if he chooses, when he is grown up.

"Every deaf child makes signs, naturally; why not then use them in teaching?" You might equally well say, "Every garden grows weeds, naturally; therefore, let us grow weeds." Every class of persons in the world have their own difficulties to contend with, and the deaf are no exception.

With regard to the success of pure oralism in England, permit me to read to you the report given by Mrs. Holland, the

Government inspectress, as regards the conditions favorable to speech, comparing in this respect the pure oral and the combined systems:

In five of the institutions where nothing but speech is allowed as the means of communication both in and out of school, the pure oral system is thoroughly carried out, and the children look upon speech as the only means of communication, except in the case of the very young beginners. In most of the institutions, however, there are children in the school who spell on their fingers, and who are allowed to mix freely with the orally taught children with very bad results. This condition, together with the want of properly qualified teachers, in many cases does great harm to the oral system; if that system is to be properly carried out changes must be made in both those particulars. As it is, throughout the country, with the exception of the five institutions to which I have alluded, the oral system is suffering seriously from the want of proper conditions, and some decided measures should be taken for securing more effectual separation of the orally and manually taught children, as at the Old Trafford School, Manchester, and for employing properly qualified teachers. As it is, children are supposed to be taught orally who are receiving instruction under a false system; whereas the true oral system renders the scholars able to mix with hearing people, instead of becoming an isolated race, as those taught on the manual system do become. In those where the oral system gives the greatest promise, the practice appears to be as follows:

"Signs absolutely forbidden and actually not used in school hours; permitted but discouraged out of school hours." "Till language has been obtained, no objection is made to natural signs." "Arbitrary signs quite forbidden; natural gestures only permitted until the children have acquired language." "Natural signs only used, and dispensed with as soon as possible in school hours; permitted but discouraged in play hours." "No arbitrary signs allowed, nor natural signs after sufficient language has been acquired." "Arbitrary signs forbidden; natural signs allowed as little as possible." "Natural signs only allowed for the first year; after that forbidden."

On the other hand, in the reports of certain institutions, such passages as the following occur:

"Natural and arbitrary signs much used by the manually taught children in school hours; no restriction out of school hours." "Signs used in school for instruction; unrestricted out of school." "Signs allowed only as far as unavoidable in play hours; no signs allowed in school hours." "Out of school hours the children use signs and are not forbidden; in school they are restricted to a certain extent." "Both natural and arbitrary signs used out of school, but discouraged among the elder oral pupils." "No restriction; signs permitted to be freely used."

With regard to the position taken by pure oral teachers in declining to learn the manual alphabet and signs in order to communicate with adult deaf, which has been referred to, let me say, as a pure oralist, that I by no means undervalue the services of those who differ from me, and that I highly appre-

ciate both their efforts and their motives; but I could not, in justice to oral pupils, learn a system which would diminish my usefulness as a teacher. I am lazy, naturally, I confess. I think most people are, and if I had an easier method at hand the temptation to use it would double my need of patience in oral teaching, and my stock of that virtue is not so great that I can afford to waste it. And I have no doubt I express the feelings of other oral teachers who take up the same position, and it must be remembered we know the adult deaf are, as a rule, well looked after already by those who approve the use of such means of communication. It is not as though they were neglected.

The pure oral system reaches the intelligence and awakens a part of the brain which the silent system never touches at all, for the deaf have a speech center in their brains as much as they have an optic nerve, but in no other way can it be reached except by oral teaching. And for the teaching of abstract ideas there is but one medium—language. That purely abstract ideas, such as the soul, immortality, and that intangible thing we call the spirit world, can be correctly expressed by a concrete sign made by our human hands is to me absolutely incredible.

The pure oral system is slow and tedious, difficult for pupil and teacher, say its opponents. I grant you—is anything worth doing in this world easy? I have not found it so. No; the highest and noblest works are also the most difficult and therefore the more worthy of our striving to attain thereto.

"Slow and sure wins the race," and, like all other great progressive movements, the pure oral system will eventually conquer and supersede all its rivals, and those who help it forward will earn the gratitude and blessings of the generations to come.

The remaining papers of the session were omitted and discussion called for.

Mrs. Zell asked leave to correct the statement that signs are taught in our schools.

Dr. Gordon expressed the thanks of the convention to Miss Condon for the interest and enthusiasm shown by her long journey to be with the meeting.

Dr. Gordon called attention to the exhibits once more. The meeting was then adjourned till 2 p. m.

AFTERNOON SESSION.

The session of the oral section was reopened at 5 minutes past 2, with Dr. Gordon in the chair.

REPORTS OF ORAL WORK IN FOREIGN SCHOOLS.

A FEW REMARKS ABOUT THE GERMAN SCHOOLS.

[By Miss Hermine M. Haupt, Kentucky.]

As I am connected with a large institution, I decided, while visiting relatives in Europe, to visit some of the large institutions for the deaf in Germany, thinking I would profit most by seeing what they are doing and what they accomplish in teaching orally. Better results than I expected were manifest and I feel more convinced than ever that the deaf can be orally taught with success in large institutions. My first visit was to the school in Vienna. This school was founded by Joseph I and for many years was only taught by the De L'Epée method. Now only the oral method is used. The pupils are not forbidden to use natural signs on the playground, but they are not allowed to use them in the schoolroom.

A little congenitally deaf boy in the second-year grade came up to me and told me that the landlord was coming for the rent that morning. He spoke so distinctly that I understood him at once. The next day I went into the third-year grade and while I was speaking to the teacher I heard the children say to each other, "America, America."

The teacher told me the children had heard from some of the others that I was visiting the school and was from America, and they were disappointed in my looks, as they expected me to be either red or black. I saw some excellent work here, only, as one of the teachers remarked to me, "they could not carry out any of their own ideas." The institution is obliged to follow out the course of studies prescribed for them by the public-school authorities. That board does not know much about the work of the deaf. The children remain in school eight years and after that time it is the director's business to see that each boy is put to learn a trade if the parents are not competent so to do. There is a special class for the deaf boys in the manual training school. The girls learn all kinds of needlework in the institution.

The next place I went was Dresden. The principal took me through nearly all the schoolrooms. I made a point of seeing the brightest and dullest pupils of each school. The kinder-

garten department of that school pleased me very much indeed, and I only wish every school had such a department. "The kindergarten is the alphabet of our whole manual-training system, educating the head, the heart, and the hand. It quickens the perceptive powers of the little ones, teaching them to observe, to think, and to act." This school is located at Planen, several blocks from the institution. It is called the preparatory school. Children are received at the age of 6 and remain there for two or three years, according to the child's mental and physical development. The first year the children are under a trained kindergarten teacher. They are taught the first principles which every child ought to know, and are gradually prepared for actual work. Attention is given to concentration, touch, etc., and the elements of lip reading and writing are taught. The gifts are used very freely. The children looked so happy that I was sorry to leave so soon. Some good results were to be seen in the second year, especially clear articulation. The house looked cozy and homelike, and a large garden for the children to play in was in connection.

Under the same supervision is an asylum for grown deaf girls, who are mostly orphans. They pay 80 marks ($20) a year, and for those who are too poor to pay this sum is made up by churches or private benefactors. All kinds of sewing is done here, and the Queen of Saxony sends them a good deal of work. Most of the girls are more or less afflicted, but each does the work which she can do best. They receive one-fourth of the proceeds of what they thus earn. There was one old woman about 60 years old, and feeble-minded, who could do nothing but knit. In Leipzig new pupils are admitted only every other year. These are divided into four classes—semi-mutes, congenital, medium bright, and very dull. The teacher who has charge of the dull ones has the smallest number and is not expected to go over as much ground as the others. I must say I felt a great sympathy for the teachers who had charge of the very dull. It takes more skill and some genius in a teacher to teach a dull pupil than a bright one, for even a poor teacher can accomplish something with the latter, but only the power of love and skill and experience can reach and animate the mind of the dullard. The school which Heinecke established is across the street from the present institution.

Berlin is the headquarters of the Imperial Normal Institute, and I saw some excellent work in language, lip reading, and articulation. I had no trouble whatever in understanding the

children, even those who were considered poor. I did not see signs used at all.

The training which the normal students receive is fine.

I found, in these four schools which I visited, bright and cheerful rooms; teachers who seemed to have their heart and soul in the work and to have made it their life study and endeavor to reach the deaf and give them as much knowledge of language and ability to speak as possible in fitting them for life.

If the Government would only allow the children to remain ten years in school much more could be done, as in the last two years their progress is so much more rapid.

In every school I found special attention given to drawing and gymnastics. I also noticed that there were no pictures on the walls of the schoolrooms, and on inquiring the reason was told the children like to gaze at pictures instead of looking at the teacher, therefore when a picture is needed it is brought out for that lesson and then put up again.

The institutions in Germany do not give the advantages in manual training which they do in the United States.

Their vacations are also shorter. The children go home during Christmas, Easter, and summer vacations. The latter lasts a month.

In all these schools the element method is used. A great deal of attention is given to breathing exercises. Pictures and toys are used all through the school.

In each school I was shown a room which was used to keep the school aids. There were maps of all descriptions, fruits in glass jars, animals, minerals, plants, chemical apparatus, etc., a most complete set of materials which is used to help in teaching the different branches.

The law of Germany requires that every deaf mute shall learn to talk and write the language.

As Director Walther says, "It is only required of a teacher to teach simple language and to teach it so that the child in after life may be able to use it freely, just as if it was part of himself." Peschel says that "the English can boast of 100,000 words, while a day laborer can get along with 300. A man with an average education does not use more than 3,000 or 4,000 and an orator 10,000."

The education of the deaf is a branch of the great trunk of universal pedagogy, and the roots of its power rest in this.

Persons who wish to become teachers of the deaf must first pass the teacher's examination, then take one or two years' training in the institution, and after that pass the examination which is required of instructors for the deaf, though this latter examination is not required in all the provinces.

Teachers generally stay in one school all their lives; when once engaged it means for life. At first the salary is small, but it is increased every year. A teacher who has taught forty years is pensioned on the same amount as his last salary; twenty years, half as much; so he is provided for as long as he lives. In case of the principal's death the head teacher takes his place and keeps it as long as he lives.

There are very few women in the profession. It is claimed that very few women are strong enough for that work, as to teach articulation strong lungs are needed.

In most of the schools teachers keep a class four years. In one institution the teacher keeps it the entire eight years. Pupils who can not keep up with the class drop back into the class below. The work is slow, but thorough. Few of us, perhaps, would like to keep a class for eight or ten years and be responsible for all the children know or do not know. Each good teacher has his own peculiar gift to bring for the advancement of his pupils, and the deaf need the full advantage of this talent and the personality of several instructors.

OBSERVATION OF ORAL WORK IN GERMAN SCHOOLS.

[By Miss Jane L. Russel, Pennsylvania.]

It is always with pleasure that I speak of the work that I saw in the schools for the deaf in Germany.

That the work in those schools is good I am sure that none of us can deny, nor can we fail to appreciate it and commend it even should it not satisfy us in every respect. As in all countries, the work in some of the schools is superior to that in others.

The first thing that impressed me was the perfect order in the schoolroom. The attention was equally as good.

The first year is devoted almost entirely to articulation. The elements are given in much the same order as that in which we give them. After the simple elements come the combinations, then the words. Much attention and time are devoted to tongue and lip gymnastics, and also to breathing exercises. Ingenious devices are used to concentrate the interest and

attention of the class in these exercises. At the close of this year's work the class has all the elements and is able to combine them; also a limited amount of language. Learning to count is often included. Simple games, such as ninepins, marbles, dice, etc., are utilized in teaching counting.

Language work begins with the second year. It embraces action work, questions, picture work, stories, and object lessons.

The following exercise was given in one of the second-year classes that I visited.

A chair was placed before the class. These questions were asked by the teacher:

What is that?

Where is it?

How many legs has it?

Sentences were then built, such as "The chair has four legs, and so has the stool;" "The chair has four legs, but the table has only three." The exercise was concluded with simple actions: "Henry, put the chair by the window," etc. Each sentence was repeated several times by every member of the class, and also by class in concert.

Several hours every week are devoted to conversation. Some object is put before the class, and questions are asked both by the teacher and the pupils. Often the teacher tells some little story to be memorized by class.

The third-year work includes language work, articulation, and arithmetic.

What we call mental arithmetic is considered very important. It seemed remarkable to me for such examples as the following to be worked without the aid of the pencil:

$$466 + 218$$
$$536 - 58$$
$$8 + 23$$
$$725 + 275$$

The correct results were given very promptly, there being no hesitation at all.

Geography is taken up not later than the fifth year, usually in the fourth. Maps are studied and also drawn. First the schoolroom, then the school, the immediate surroundings, and so on. A great many pictures are made use of—character pictures that are prepared for that purpose, and also others collected by the teacher. The idea is to make the class thoroughly familiar not only with the names of the countries, but also with

the land, the people, and whatever of interest is connected with them.

Not until the sixth year is history begun; first biography, then home history. These recitations, with the aid of character pictures, historic poems, and other devices, are very interesting to all present. The plan of grouping events around a more important event is used. I well remember one recitation that I heard, the subject was one of the Crusades. A poem on the Crusade was repeated by a member of the class. This formed the foundation for the lesson. The countries, the dates, rulers, important events were given. This recitation, as all of those I have heretofore mentioned, was entirely oral. The dates and names were written on the slate afterwards.

The study of nature begins early in the course; as early as the second year. The children are encouraged to think for themselves, to observe closely, and also to appreciate the beauty in nature. The lessons are all very practical and useful. The best-known flowers and plants are studied first.

From morning until night are the children talked with. Every hour of the day, be they at work or be they at play, do they talk. The more closely speech links itself with the everyday life of the child the easier it is to overcome the use of signs. Every word, every phrase, every sentence is made use of. Each step is taken very carefully and very slowly. There is no undue pushing and hurrying. The children thoroughly enjoy their work. They are happy in the schoolroom and on the playground. The pupils seem to work with the teacher. They realize that success can be reached in that way alone.

The lip reading is very satisfactory, both as to rapidity and as to accuracy. No mistake is considered of too little importance to be corrected.

Altogether, I think that Germany can justly be proud of her schools for the deaf and of the success of oralism in those schools.

OBSERVATIONS OF THE SCHOOLS IN GERMANY.

[By Miss Agnes Steinke, Wisconsin.]

LADIES AND GENTLEMEN: A year ago last April I entered the training school for teachers of the deaf at Berlin to take the course. In Germany the school year begins after the Easter vacation and is divided into four terms. I saw a class started there, and one at Frankfurt. In neither case was there a sign used for any word taught.

The first and second days the sessions were short. The time was spent in getting acquainted, in drawing, and looking at pictures. The third day they began breathing exercises, and the work on consonant sounds. After two weeks they began vowel sounds. As soon as a vowel sound was learned it was put with all the known consonant sounds, the latter first, and drilled. The spring term closes at the end of June for a five weeks' vacation. At the end of that term the class knew ä (ah), ü (ōō), ē, and p, t, k, f, s, sh in all combinations with the vowel first.

After vacation, school beginning again on the 8th of August, the teacher began concert work, selecting groups of three or four who knew the same sounds. The order of sounds in the combinations was also reversed and the consonant placed first. The concert work made a pleasant change from the individual work on new sounds, which continued daily.

From the first day they had been using slates for writing and drawing. Now they began to use lead pencils and blank books for writing. Words of one syllable were now introduced and combinations consisting of a vowel between two consonants. Long ō and long ā were left as last of the vowels, being considered the most difficult. After the holiday vacation the class began to use pen and ink. About this time the work on words of two syllables began. A great deal of time is spent on accent, pitch, and inflection in all the grades. It is believed to be better to keep the voice a little high at first, as it will naturally wear down but never up.

At the end of the year they could pronounce words of three and four syllables and accent them correctly.

All the new words were explained by models or by pictures. In every class room are one or two large cases containing material likely to be used at that stage of the work. At the beginning of each year the classes advance a room. The primary classes occupy the first floor and the higher classes the second. The same teacher keeps a class through the whole course in the Berlin school. He knows when he takes the class as beginners that he will be responsible for what it knows at the end of the course. This fact, together with the two examinations, goes a good way to make a teacher do his best. The examinations are held in the class room of the first class, it being the largest room. The superintendent, all the teachers, and all the student teachers are present. The examinations

are oral. They last two days, and take place in April and in September. In the morning, before the opening of school, the superintendent gives the teacher the subject and the topic or lesson in which his class is to appear that day. They begin with the lowest class and advance regularly. Pupils of the higher grades are in charge of the classes in their respective class rooms during these two days.

But to return to the beginning class work. During the last term the work became very interesting, short sentences—requests and orders—being given, all of which were acted out by the pupils. They enjoyed this work the most of the whole programme. The daily practice on sounds and combinations continued.

The forms of the printed letters were also taught the last term. At the end of the year the class knew about 275 words, the name of the number of objects in a given group to six, their given names, and the given names of their classmates, and all the teachers' names. I was often surprised to see how much use they made of their language.

Then the second year they are all ready for questions, of which they have only had: What is this? What color? How many? They begin second-year work with the schoolroom; learn the names of the objects in it, what the same are made of; such adjectives as heavy, large, strong, etc. Next they go to the garden for their lessons. Here many new verbs come into the work. The home follows the garden. In the school are models of the different rooms of a house with their furnishings. They learn about each of these. After the home comes the street. Reviews of the whole occur about once a week. In numbers they are learning 20—all the additions and subtractions. I saw a device here which seemed to please the children greatly and make subtraction plain to them. On the floor in front of the class the figures from 1 to 10, inclusive, were written in a column. The teacher gave the exercise orally to the class as 8 less 3, and called a pupil to perform it. The child came forward and took his place on the 8. As he stepped on the 8 he said, "1;" looking up the column he counted "2, 3," and then jumped onto the 5. He then repeated "8 less 3 is 5." The more difficult subtractions, or the hard jumps, were remembered because only a few could jump them. When I came around again after five weeks, they could answer as fast as the teacher could give the exercises. In the second year begins home work, and then

very little written work is done in school. Indeed, I might say none is done after the second year. In the lower classes the home work is all the work they have had in school. There is no original work. All through there is less of it done than we do. There is scarcely any below the fifth year. In the third year the pupils receive their first reading books, begin the Old Testament stories, and begin a wordbook.

The new and difficult words occurring each day, with the date above and a synonym opposite, are written in columns. One or two sentences are generally written to illustrate the use. If the word is from a lesson in a text-book the page and name of the lesson are also noted. These books are kept on through the entire course. It is remarkable how much the pupils use them and how quickly they can find the word they want. They also begin journal writing in the third year, but they only write when something unusual happens, maybe once or twice a month.

At the end of the third year I began to notice that our pupils are in advance in knowledge in corresponding years from here up; but just in the same measure their speech and lip reading surpasses ours. Their language in answer to questions on a reading lesson, or anything requiring the same thought put in another form, is very much ahead of what I expected to find, being, with but few exceptions, grammatically correct. The schools are smaller; there are no deaf teachers; the children are constantly under the supervision of some hearing person, who can correct their speech, both pronunciation and grammatical form, and the results are seen everywhere. The lip reading was the most wonderful to me. Pupils read the lips of classmates without any trouble. Very seldom does the teacher repeat a question or a statement. If some did not get it the teacher calls on some member sitting near to repeat. The attention is almost perfect.

In the beginning of the course they make haste slowly. The teacher is never tired of correcting mistakes in pronunciation, never lets one go by without correction, all of which takes a great deal of time. While they are doing this they can not be imparting knowledge. A pupil who has made a mistake must work till he gets the correct pronunciation, or if it is a grammatical error the teacher tells him. Then, he must repeat the correct form ten or twelve times. Every pupil sits perfectly still, hands on the desk, watching the lips of the one speaking.

Anyone may be called on at any moment, or the class may be required to repeat the sentence. This drill work thoroughly done the first three years makes very little of it necessary in the higher grades. They speak slowly. I happened to be in the fifth-year class the first day I was in the school. I had never heard a deaf person speak German, but I understood every word spoken and could hear, though I sat at the back of the room. The voices were good, and the pupils are everywhere required to speak loud from the beginning. I noticed the same in the other schools which I visited. I speak mainly of the Berlin school because it is the most firmly impressed on my mind.

In Würzburg, where I spent a week, they had been making quite extended auricular experiments. Two years ago they had two auricular classes. They were doing nothing in this line at the time of my visit, but the teacher showed me the different instruments he had used and illustrated their use. The board, superintendent, and teacher all agreed that the small gain did not pay for the amount of time spent. Here there is a deaf and blind girl, Theresa Exner, who lives in the superintendent's family and has a private teacher.

The school at Gerlachsheim was the largest I visited, having in the neighborhood of two hundred pupils, nearly all living in the school.

The school at Halle has about fifty pupils, all of whom either live at home or board in private families. The speech and lip reading was very good. The beginning class had done just about the same work as the class in Berlin.

The Dresden school I only visited at the time of the convention and am not able to express any opinion. We saw the classes, but not at work. The exhibit of manual work was very good, embracing all the trades usually taught in schools for the deaf.

Coming to manual work reminds me of a point I wish to mention. Germany does not intend her schools for the deaf to be training schools for trades. Their duty is to make good, law-abiding citizens. This is why their course of study is so much shorter than ours. In most schools it is seven years, in a few eight, and in some only six. When the school course is finished the pupils are apprenticed to a master. The superintendent and teachers voluntarily assume the duty of providing those having special talents with masters, advising the

parents, and keeping a general oversight of the apprentices if they remain in the town where the school is located. Many from away remain in the family where they have been boarding during their school time. To encourage a master in any trade to take a deaf apprentice, the Government offers a reward of 150 marks to such master on condition that the apprentice passes the required examination, thereby proving that he is able to support himself by working at his trade. The master is also required to receive the apprentice into his family and supervise his social life. In the Kingdom of Prussia this reward has been given since 1817. In 1870 it was extended to the whole of Germany. The same is also allowed for girls when the same conditions are filled. From the class which graduated from the Berlin school last spring two boys were admitted the Royal Porcelain Factory on presentation of their drawings. In all cases of children from the provinces it is preferred to return the children to their parents and place them under a master there, but in many cases this is impossible. It is believed best to prevent as much as possible the forming of large societies of deaf persons in the institution towns, because the more the deaf, on leaving school, are with hearing people the more they grow like them.

Former pupils returning to visit the school often have not only retained their pronunciation but have greatly enlarged their vocabulary. I especially remember a young lady who visited in the superintendent's family last winter. She talked about all the general topics of the day, talked without being questioned and seemed to enjoy it. Whenever I went to the school Sudnay afternoons and there were former pupils there visiting with the boys, I noticed that they always talked. While they made now and then a sign, their lips were moving all the time, and, strange, when talking among themselves they always speak without voice. An incident which occurred at Frankfurt will show how little the children in the schools for the deaf in Germany know about signs at the present day. A deat peddler came onto the playground one day and began signing to the children. They could not understand, him, neither could the teacher on duty. Mrs. Vatter, the superintendent's wife, had to come and interpret what the man said. I saw very few signs anywhere. In the smaller schools, like Frankfurt and Halle, I saw none. I was in the class room, in the workroom, on the playground, and at the meals, having every

opportunity to observe. Please remember this applies to the schools. In the societies I did see an extended use of signs. I inquired of the teachers in the different schools I visited what signs the children made for some common words like home. In no case did I find the conventional sign. They point for "home" as we would for "over there." I did not see any manual spelling nor anyone who knew the alphabet, and they count on both hands as the children in the public schools.

VISITS TO FOREIGN SCHOOLS.

[By Miss Kate F. Hobart, Horace Mann School, Boston, Mass.]

It was my good fortune, during my rest of fourteen months abroad, to have the opportunity of visiting a number of the schools for the deaf, and it is of these visits that I have been asked to tell you. In my description I shall classify the schools, not in the order in which I visited them, but according to the countries in which they were situated.

The English schools which I saw were in London, Edinburgh, and Glasgow. In London two of the schools were "board schools," which correspond to our public day schools, and the third a private day school. There are in London some sixty classes for the deaf, connected with the board schools. These classes are located in the school buildings of the hearing children, generally. The attendance in school is based upon age and not upon the number of years in school. A child is not allowed to remain in school after reaching the age of 16, with an occasional rare exception. Within a few years attendance has been made compulsory at the age of 7, which is increasing the number of years a child is in school. In London "speech is compulsory," as one interested in the deaf told me, "at least an accomplishment." In the first of the two board schools which I visited the classes had the pure oral method; in the second some classes used the oral system, while others used the combined. In all the oral classes which I visited the lip reading was very good, the speech very understandable. Professor Van Pragh kindly showed me over his private school, which is a pure oral day school. Professor Van Pragh has both classes for children and normal classes for teachers. The results shown by the children proved the success of his work. In Edinburgh a two-handed manual is used, the oral method only in cases of exceptionally bright

children. To a limited extent the children had very good control of written language. The director spoke especially of the difficulties he had in fitting the children to read for themselves. In Glasgow the combined method has been used; to-day every class that enters has pure oral teaching. The director is making every effort to spread the oral work throughout the school. With the youngest children I heard a successful reading lesson from a primer, and with the oldest pupils I held a pleasant conversation. In these two institutions much attention is given to the industrial classes.

In France I visited the national schools, that for the boys in Paris and that for the girls in Bordeaux, both of which, as you know, are institutions. From the sign method, in use in Paris years ago, the institution has changed to the oral system. I saw the entering class working with elements, the second class using simple language, and higher grades employing language fluently. The teacher of the fourth class was making personally a thorough study of aural work and inquiries about Dr. Gillespie's work. The institution of Bordeaux for the girls was one of the two institutions that stood for the most successful work that I saw. In Bordeaux I heard very pretty speech. The method of presenting the language and all the teaching seemed based upon modern methods. The girls were interested in their work, and delighted to speak with my friend, a perfect French scholar, but one who had never met nor conversed with the deaf before. She was charmed with the work and the correctness with which the children used language, and had no trouble whatever in understanding them.

In Italy my visits were to the two national schools in Naples and the two in Rome. The principal at the institution for boys in Naples was much interested in working out a scheme of exercises based upon the metronome as a means of best developing accent and rythm in speech. He had not quite completed his work, but it was to be published soon. The chief hand work was clay modeling, but that, he said, was not to teach them modeling for the entire sake of the modeling, but to educate their hands and minds, a good solid principle, surely. The school for girls showed what is a strong element in many Italian schools for girls. While interested in the mental development of the girls, and teaching by the pure oral method, the chief point was their needlework, sewing, embroidery, and lace work. In Rome, as in Naples, the national schools had

the oral method, and some of the work was in advance of the work in Naples. It was in the boys' school that I saw a very interesting oral lesson on the use of the words "neither—nor," and also of the word "while." The work in the girls' school was very good—far in advance of the corresponding school in Naples, the embroidery, etc., evidently holding a secondary place.

And lastly come the German schools. It was in one of the schools in Berlin that, having gone from class to class, seeing articulation, language, arithmetic, etc., I concluded my visit by listening to a lesson in the highest class on the Franco-Prussian war. In Dresden I was much interested in the questions of the children of our school in Boston, my ocean trip, etc., and I enjoyed also a mental arithmetic lesson in practical questions involving the use of fractions. But my day at the institution in Munich stands as the brightest in all my visits. While to my mind Bordeaux, taken all in all, stands for the work that may be accomplished by the teaching of elements as a foundation of speech, so Munich proves clearly the success which comes from the word-method as a foundation.

I hoped to see some of the schools in Sweden, but my stay there was too late; the schools having closed before I arrived.

In all my visits my welcome was very cordial, and every opportunity was given me for seeing the work. Principals and assistants, with scarcely an exception, were earnest workers in giving to the deaf speech, which is all in all to them, and the same education which is provided for their hearing brothers and sisters.

THE ADVISABILITY OF ENTIRE SEPARATION OF MANUAL AND ORAL PUPILS.

[By Warren Robinson, Wisconsin.]

In this brief paper I shall avoid unnecessary details, fine distinctions, the relating of individual experience, the discussion of the important relation the various uses the hand bear to mental development, or the influence of the principle of association in educating, trusting to the most favorable conditions to decide in each case how far the work of speech teaching may be carried without being a drawback or hindrance to a fairly well rounded education, for the average school life of the deaf is under five years. Understand, I do not wish to underestimate the value of speech and lip reading as factors in education, though the nature of deafness more or less

reduces their force. The point to which I desire to call your attention is the securing of conditions essential to a larger practice in speech and speech reading. Whatever plans may be laid to achieve this object will fall short where the conditions are lacking just as certain as that vegetation will not thrive in an uncongenial soil. So it is a condition, not a theory, I am speaking for, and that condition is "oral environment" while pupils are oral pupils, whether on trial or under oral instruction. We learn a thing, if it is learned at all, by doing it, not by being told how or by occasional practice. Particularly is this true of speech and lip reading. Even the acquisition of speech by the hearing is not accomplished in a day or without difficulties. Have you ever stopped to think how long it takes a hearing child to learn to talk? The writer's little girl, now in her eighth year, has been at it ever since she was six or seven months old, and can now talk pretty well; but from that time to this she has been exercising her vocal organs in every conceivable way, and, in addition, has been all ears, listening to everything.

Now, if it takes all this time, practice, hearing, and freedom for a hearing child to learn to talk, does it not stand to reason that it will require more for a deaf one? It is not being claimed that all the deaf are going to learn speech even under the most favorable conditions, but that the conditions should be as near as possible to those enjoyed by a hearing child to secure the best results. Otherwise, it can hardly be said that a fair trial has been made.

The qualities of speech or what successful speech is are not now under consideration; but it might be said in passing that Principal Job Williams, of the Hartford School, Dr. Bell and Superintendent Dobyns, of the Mississippi School, all appear to agree that a successful case is a pupil who has so far mastered speech and lip reading as to be understood by members of his own family and possibly intimate friends. There are also those who maintain that a fair proficiency in lip reading, with less power of speech than above mentioned, entitles a pupil to be continued as an oral pupil.

How the persons just referred to would regard the complete separation of these two classes of pupils from the manual pupils I am not in a position to state.

To give the idea contained in this paper definite form, and to place it in line with the present tendency to afford still greater

facilities for the acquisition and practice of speech and lip reading, I offer the following plan:

The pupils of the oral and manual departments to live separately, occupying the shops at different times; all pupils to be given a trial more or less prolonged, as the case seems to warrant; those who show unsatisfactory progress in the oral department to be transferred to the manual. This leaves two more classes to be considered—those whose speech is so unpromising as not to justify their being deprived of the educational advantages of manual methods for more than half the course, and those of the older boys or girls who may desire to quit the oral department, but can not get the consent of their parents.

For an arrangement of this kind, if fairly carried out, it does not seem unreasonable to claim such advantages as the following:

It will bring about more favorable conditions for oral work; it will set to work influences in the direction of speech and speech reading which can not be secured in any other way; it will allow a reasonable measure of freedom which is inseparable from the successful prosecution of all educational work; it offers to both speech and education opportunities commensurate with their importance; it will have a tendency to inspire more confidence in our large schools; and, finally, the plan itself is its best safeguard against extremes.

Of course the immediate adoption of such measures as suggested here is not to be expected; but a concensus of opinion will go a long way toward determining the line of action to be pursued, for it is doubtful if there is a single individual among us who would care to assume the responsibility for the settlement of such a momentous question.

But the question may be asked, "Does this plan not contemplate a radical change in the present combined or eclectic system of our schools?" From my point of view, not at all. To me the eclectic system not only means the most suitable methods, but the most suitable conditions as well. The two departments will only be more sharply distinguished, but, side by side, each will perform its part or assist where the other fails in helping forward the evolutionary process of human development.

In closing, it is no more than justice to myself to state that the conclusions I have reached are the result of careful thought

and observation, the high estimation in which I hold practice, my experience in keeping up my own speech, conversation with different people, etc. I brought the subject to the attention of the teachers' association of the Wisconsin School for the Deaf six years ago and again last winter substantially as presented to you to-day. When I was encouraged to bring it before this meeting I thought no harm could come from an honest discussion of the matter, but possibly some good.

DISCUSSION.

Mr. Rogers asked for a show of hands on the main idea of Mr. Robinson's paper. Mr. F. D. Clarke asked Mr. Rogers to withdraw his request, and Mr. Rogers expressed his willingness to do so, but Mr. J. R. Dobyns urged him not to withdraw it.

Dr. GALLAUDET. I have listened to the paper with great interest for two reasons. First, because the writer was once a student at Washington. I am proud of his success. I should receive his views with great respect. Second, he suggests an arrangement which I think is to be approved. I say this with the qualification that the details should be carefully considered. Much would depend upon a number of possibilities and other things. I made a report thirty years ago, after a trip to Europe, where I saw an arrangement in Copenhagen where two schools were under the management of a joint committee representing these schools. Pupils were transferred from one school to another. They were kept separate for reasons stated by Mr. Robinson. The institution at Mount Airy, Philadelphia, had a chance to carry out such an arrangement for the education of the deaf. I look upon the Mount Airy plan with much favor. But it is of great importance that under an arrangement for separating pupils such as Mr. Robinson suggests great care should be taken that pupils should not be retained in the oral department whose success in speech is limited.

Mr. HILL. I am not satisfied in my own mind and want to ask one question, and that is, where it has been tried I suppose the object is to get rid of signs. Is there such a separation at Mount Airy as to preclude signs? If there is, I should like to know the result of it.

Dr. CROUTER. I would not say that signs have been entirely

suppressed among the pupils of the oral department nor of the manual department. I do say signs are not used for purposes of instruction by the teachers of our oral department. When I say that, I wish to be understood as saying that conventional signs are not used. Natural signs and gestures are necessarily used at the primary stage. Signs are not necessary—I mean conventional signs—even in the manual department. I do not want a vote taken on Mount Airy methods. I would prefer personally that my good friend Mr. Rogers withdraw his question. I do not want Mount Airy voted up or down at this time. Let everyone prove this matter for himself. Educational methods can not be created by mere votes of conventions.

Mr. F. D. CLARKE. I do not suppose that it is necessary to tell this audience that I do not know how to conduct a school without signs. I think you will know where I stand. With all due deference to Mr. Rogers and without implying that he meant to criticise another school, I would not like to see a vote on this question.

Mr. ARGO. I fully intended to ask the question myself, because I want to know. I have asked the question many times privately. I want to get the best results, and I will follow that plan. You know that in combination schools when you have both departments, the oral and the manual mixed, you do not get the best results. If I had an arrangement suitable for separation and an unlimited pocketbook I should separate them. This convention is agreed upon two or three things. We agree that the semimutes should be taught orally and that a percentage of the congenitally deaf should be taught orally. Some think it should be 30 per cent and others think it should be 90 per cent. Now the question before us is, What is the number to get the best results? Of course I understand there may be many things to be considered, but I do not see any objection to getting an opinion as to whether it is better to separate the manual and oral pupils or not. Someone who has tried both plans ought to be able to give us the result of his experiment. We are here to obtain the experience of those who have had an opportunity to try both plans.

Mr. MOSES. I do not think this question can properly come before the meeting. I do not think it is proper for this convention of instructors to issue formulated announcements of their views. It would be the announcement of the views of

the whole convention and that would be unwise. If it is to be taken up at all, it must be in the convention of principals and not in a section of this convention.

The president upheld the point raised by Mr. Moses, and the discussion was dropped.

ORAL WORK WITH CLASSES OF PUPILS OF THE OHIO INSTITUTION.

[By Mrs. Mansur.]

A lesson was given to a class of one pupil. The name of the pupil was James Grafton, and he was 11 years old. The pupil was put through a series of test exercises to show his ability to read the lips. He was also given a lesson in numbers on the blackboard to show his ability to add numbers. She also brought out the fact that the boy had been to Camp Bushnell, and had seen the soldiers there. She asked a great many questions in regard to the camp, all of which were answered satisfactorily by the boy. This boy was quite intelligent and showed very careful training. She gave him a list of words from a story and had him write the story from memory.

LESSON BY MISS GREENER.

This lesson was given by Miss Greener to a class composed of three girls and two boys. They were two-year pupils. She had an Indian picture scene from which she developed the lesson. In this lesson she taught them many facts in regard to the Indian race. There was a baby in the picture, from which she taught them many lessons of home life. The lesson was quite interesting throughout and engaged the close attention of the audience.

Dr. WILLIAMS. Are these children congenitally deaf?

Miss GREENER. I do not know.

Mr. JONES. I can not tell from the records. Some of them, so the records say, lost their hearing when they were 19 months old.

LESSON BY MISS SCHWEGLER, OF THE CINCINNATI DAY SCHOOL.

This lesson was given to two pupils, a girl of 12 years and a boy of 14 years.

Miss Schwegler said: "I had no intention of bringing any children until the Washington convention. I wrote to the teachers at Cincinnati, and found that all but two had left the institution. We visited the parents, but found that the chil-

dren had gone away for their summer vacation. I wanted to bring my whole class, but I could only secure two pupils. It numbers seven members. I will now give a lesson in history to these pupils, not for the purpose of showing you their knowledge of history, but for the purpose of showing you their ability to read the lips.

"The girl has been in school for six years, and is totally deaf. The boy is semideaf, and he has attended school for the same length of time. He can not depend on his hearing when I speak to him in a low voice."

The teacher then developed the story of the Revolution in a very interesting manner. She also gave them a lesson on the present war and the country of Cuba, which showed them to be well up on current events. The teacher said the boy was a great reader of the newspapers. She also taught them in regard to Havana, and talked to the class about Washington, Dewey, and Benedict Arnold.

LESSON BY MISS GRIMES, OF THE OHIO INSTITUTION.

This lesson was given to two girls, who had been in school for six years. The teacher said that these children were born deaf, and had remained totally deaf from childhood. She gave them a lesson in arithmetic. She gave various numbers, beginning with those containing three figures. The teacher then gave them the problem of reducing 4 bushels 5 pecks 5 quarts and 2 pints to pints. The children solved the problem without difficulty by the analytical process, writing each successive step of the process on the blackboard. The work of the class showed very careful training on the part of the teacher. Some questions were asked by the audience and satisfactorily answered by the teacher.

Reports of oral work in schools were omitted, and the oral section was adjourned. Dr. Gallaudet took the chair and read the following telegram:

YONKERS, N. Y., *August 1.*

Mr. E. M. GALLAUDET, *President*, and J. R. DOBYNS, *Secretary:*

(Care Convention of American Instructors of the Deaf, Institute for the Deaf and Dumb.)

I have received with gratitude the telegraphic message of the convention. It is a benediction on a long life spent in the cause to which its members are devoted.

ISAAC LEWIS PEET.

The meeting then adjourned till 7 p. m.

BUSINESS SESSION.

The meeting was called to order at a quarter past 7 by the president. Resolutions were presented and adopted as follows:

1. It has been the custom to collect and publish necrological reports in the proceedings in the previous meetings of this convention in reverence for the memory of the departed friends who were engaged in this profession.

Since the last convention there has been a considerable number of our fellow-teachers who have passed away to enter the heavenly life.

I move that a committee of three on necrology be appointed by the president of this convention to collect obituary accounts, and present a report with them at this convention at some time before the sine die adjournment of this convention, and that the same committee be further continued in office to prepare and give another report in advance for our next convention.

Presented by Mr. Larson. The president appointed Mr. Larson, Mr. N. F. Walker, and Dr. De Motte on this committee.

COLUMBUS, OHIO, *August 1, 1898.*

DEAR SIR: The committee on a graded course of Sunday-school lessons reports progress, and, in view of the magnitude of the work, suggests that it be granted until the next convention in which to present a complete report.

Respectfully, J. H. CLOUD, *Chairman.*

Dr. E. M. GALLAUDET, *President of the Convention.*

2. To grant more time to the committee on a graded course of Sunday-school lessons to prepare their work. Presented by Mr. Cloud.

3. *Resolved,* That the members of the convention of American instructors of the deaf recognize in the Volta bureau an important adjunct to the work of the education of the deaf, and they hereby express their appreciation of the valuable service the bureau has rendered to the cause so near their hearts by the collection and preservation of material and the dissemination of publications relating to the education of the deaf.

Resolved, That the secretary be requested to transmit a copy of the foregoing resolution to the superintendent of the bureau.

Presented by Dr. Gallaudet.

The Secretary then read the report of the executive committee:

COLUMBUS, OHIO, *August 1, 1898.*

To the Convention of American Instructors of the Deaf:

The standing executive committee, as required by section 5, Article IV, of the constitution, begs leave to present the following report:

The committee was directed by a resolution of the convention, adopted July 8, 1895, "to prepare and file proper articles of incorporation under the laws of any State or district, as it may elect."

In accordance with this resolution the committee secured the passage by Congress, and the approval by President Cleveland on the 26th of January, 1897, of the following charter:

An Act to incorporate the Convention of American Instructors of the Deaf.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Edward M. Gallaudet, of Washington, in the District of Columbia; Francis D. Clarke, of Flint, in the State of Michigan; S. Tefft Walker, of Jacksonville, in the State of Illinois; James L. Smith, of Faribault, in the State of Minnesota; Sarah Fuller, of Boston, in the State of Massachusetts; David C. Dudley, of Colorado Springs, in the State of Colorado, and John R. Dobyns, of Jackson, in the State of Mississippi, officers and members of the Convention of American Instructors of the Deaf, and their associates and successors be, and they are hereby, incorporated and made a body politic and corporate in the District of Columbia by the name of the "Convention of American Instructors of the Deaf," for the promotion of the education of the deaf on the broadest, most advanced, and practical lines; and by that name it may sue and be sued, plead and be impleaded in any court of law or equity, and may have and use a common seal and change the same at pleasure.

SEC. 2. That the said corporation shall have the power to take and hold personal estate and such real estate as shall be necessary and proper for the promotion of the educational and benevolent purposes of said corporation, which shall not be divided among the members of the corporation, but shall descend to their successors for the promotion of the objects aforesaid.

SEC. 3. That said corporation shall have a constitution and regulations or by-laws, and shall have power to amend the same at pleasure: *Provided,* That such constitution and regulations or by-laws do not conflict with the laws of the United States or of any State.

SEC. 4. That said association may hold its meetings in such places as said incorporators shall determine, and shall report to Congress, through the president of the Columbia Institution for the Deaf and Dumb at Washington, District of Columbia, such portions of its proceedings and transactions as its officers shall deem to be of general public interest and value concerning the education of the deaf.

Approved, January 26, 1897.

As required by section 3 of the charter, the incorporators, being the same persons as the members of your standing executive committee, adopted, by a unanimous vote, the constitution, which was accepted by the convention at Flint, Mich., July 5, 1895.

Mr. S. T. Walker, the secretary of the convention and of the committee, tendered his resignation of those offices in the summer of 1897, shortly after his retirement from the superintendency of the Illinois Institution for the Deaf and Dumb.

His resignation was accepted on the 28th ultimo, and Mr. J. R. Dobyns was elected by the committee to take his place as secretary.

Receipts of the committee since the last meeting of the convention:		
Two life-membership fees	$50.00	
Membership fees	494.00	
Annual dues	265.00	
Contributions	2.00	
Interest on deposits	4.25	
		$815.25
Expenditures of the committee:		
For printing proceedings of the convention held at Flint, Mich	$585.00	
For stationery, postage, expressage, etc	29.09	
		614.09
Leaving a balance in the hands of the treasurer July 27, 1898, of		201.16

The committee arranged by correspondence, and a visit of the chairman to Columbus in October, 1897, without expense to the association, for the meeting of the convention now in progress.

Since the treasurer's report was handed into the committee additional membership fees and annual dues have been received by him to the amount of $305, making the balance now in his hands $506.16.

The roll of active members of the convention, entitled to vote and hold office, is as follows:

The roll of members was then called. A quorum being present, elections were announced in order. Mr. Walker moved that nominations from the floor be allowed. Mr. Nelson amended, by substitution, that an informal ballot for president be taken. Mr. Booth and Mr. Moses raised points of order, but Mr. Nelson's amendment was seconded, the chair ruling that it was in order, and it was passed.

Messrs. Mitchell, Argo, Day, and McGregor were appointed tellers, and balloting began, with the following result:

President, Dr. E. M. Gallaudet; vice-president, R. Mathison; secretary, J. R. Dobyns; treasurer, J. L. Smith; directors, W. K. Argo, Miss S. Fuller, and Robert Patterson.

The following committee was appointed to nominate the chairmen of sections: Dr. Wilkinson, Dr. Crouter, Mr. Burt, and Mr. W. O. Connor.

The following were reported as nominations for chairmen of sections:

Normal section, W. A. Caldwell; oral section, Dr. J. C. Gordon; auricular section, E. H. Currier; kindergarten section, Miss Mary McCowen; industrial section, W. Robinson; art section, Ernest Zell; eastern section, E. B. Nelson; western section, F. W. Metcalf; southern section, W. O. Connor.

The secretary was empowered to cast the ballot of the convention for all these nominations.

The following committees were announced later:

Committee for the normal section.—W. A. Caldwell, chairman, California; J. W. Blattner, Texas; Mrs. Alice N. Smith, Minnesota; H. E. Day, Kentucky; Mrs. Sylvia C. Balis, Ontario.

Committee for the oral section.—Dr. J. C. Gordon, chairman, Illinois; Miss Mary McCowen, Illinois; J. W. Jones, Ohio: Miss Frances Wettstein, Wisconsin; Mrs. Lottie K. Clarke, Michigan.

Committee for the auricular section.—Enoch H. Currier, chairman, New York; Dr. J. C. Gordon, Illinois; F. D. Clarke, Michigan; Miss Catharine S. Siles, Ohio; R. O. Johnson, Indiana.

Committee for the art section.—Ernest Zell, chairman, Ohio; Miss Jessie Connor, Georgia; Theophilus d'Estrella, California; Miss Gabriella Le Prince, New York; Mrs. Sylvia C. Balis, Ontario.

Committee for the industrial section.—Warren Robinson, Wisconsin, chairman; E. McK. Goodwin, North Carolina; Edward J. Hecker, Indiana; Miss Minnie Overton Bell, Missouri; Miss A. F. Struckmeyer, Wisconsin.

Western local committee.—F. W. Metcalf, chairman, Utah; Miss Effie Johnston, Illinois; N. B. McKee, Missouri; D. F. Bangs, North Dakota; Conrad Spruit, Iowa.

Southern local committee.—W. O. Connor, Georgia, chairman; Philip H. Brown, Louisiana; J. H. Johnson, Alabama; Mrs. Anna C. Hurd, North Carolina; Mrs. Anna Rogers, Kentucky.

Eastern local committee.—E. B. Nelson, chairman, Rome, New York; F. W. Booth, Pennsylvania; Robert Patterson, Ohio; T. P. Clarke, Michigan.

SIXTH DAY.

MORNING SESSION.

TUESDAY, *August 2.*

The convention was called to order by the president at a quarter past 9. Prayer was offered by the Rev. Mr. Cloud. The minutes of the preceding sessions were read, amended, and approved. Rev. C. L. Zorbaugh, of Cleveland, and Stephen R. Clark, a former superintendent of the Ohio institution, were elected to honorary membership. A letter from the Hotel Association of Chicago, asking that the next meeting be held in that city, was referred to the executive committee.

Mr. Caldwell took the chair and the work of the normal section began with the question box. Questions were answered by Mr. Argo, Mr. Dudley (through Mr. Argo), Mr. Clarke, Mr Smith, Mr. Blattner (through Mr. Booth), and Mr. Cloud.

THE ROTARY SYSTEM.

[By G. M. McClure, Danville, Ky.]

This is an age of specialists. In every department of human endeavor we see the world's work divided and assigned in detail to those best fitted by education and training to accomplish it. The wonderful advance in the arts and sciences that has marked the closing years of this splendid century is due largely to the extension of this principle. Is there a place for it in our schools for the deaf? If so, where, and how far can it be advantageously applied? A number of the largest and most progressive schools favor it; others are not convinced of its utility. The schools using it give it different scope. Where is the point of vantage and what are the objections of those who oppose it?

"Classes or departments?" is a term met with increasing frequency in the discussion of matters relating to our work. There are two sides to the question, and in gaining in one direction we must in some instances lose in others. The class system has come down to us from time immemorial. There is nothing experimental about it; it is a tried and seasoned system, under which our schools have prospered and are prosper-

ing, and is not to be lightly discarded. As that able teacher W. G. Jenkins said, "The man who shuts his eyes to the past as a source of guidance and knowledge does not know how to face the future."

But the same authority also said, "To hold on to the past just because it is old would be intolerable;" and if we do not keep our minds open to conviction of the possibility of something better than we have yet known we are false to our duty.

The teachers of the deaf are substantially agreed that the department system, or, as it is generally called, the rotary system, can not be profitably introduced before the sixth or seventh year of the course. The character of the studies hardly admits of a satisfactory division of the work before that stage is reached, while it is admitted by nearly all of even the most pronounced advocates of the system that during those earlier school years the pupils need a teacher who will act the part of "guide, philosopher, and friend," who will stand in a relation almost as close as that of parent—something possible only under the class system. Children hunger for affection, and during their earlier years are more easily controlled, and are happier, I believe, under the charge of a single teacher; but as childhood passes into youth the horizon of the pupil should broaden also. The change from the class to the rotary system does not mean that the pupil is thenceforward to be left to himself, since he will have several teachers instead of only one to take an interest in him. It is a natural progression from a smaller to a larger world, where at a stage when he is beginning to think and reason for himself he is given a better opportunity to use his powers. The pupils in our schools lead very secluded lives, and meet all too few people from the outside world. It is a great advantage to have them brought into contact with as many people of the right sort from this world as possible during the closing years of the course. It teaches them to look at things from more points of view, to be more self-reliant in character, more independent in habits of thought, develops a stronger individuality, and makes them better acquainted with their own points of strength and weakness.

Then, even the best teacher is hardly all sufficient as a model for his class. Some desirable principle almost negative in one teacher may shine forth strong and positive in another.

Whatever view we may take of the importance to be ascribed to the personal elements entering into the question of the child's

education, I think it must be admitted that the teaching is better under the rotary than under the class system, other things being equal. A teacher can do his best work along lines that are congenial to his tastes; which he understands best, and for which he has that intangible something called "knack." When there is in a school an instructor with a special aptitude for teaching some one branch, it seems a pity to confine his talent to the narrow field of a single class instead of giving several classes the benefit of it. It is possible to get the teacher's best and lose his worst. The system is fairer to the pupils, in that it gives them the benefit of the average teaching talent of the school—an average of the best that a number of specialists can give them at that. It is quite possible for a teacher whose general work is of very ordinary character to do excellent work when his energies are concentrated on a single subject. Concentration of thought, purpose, energy, and study in one direction is bound to tell. The lesson of life, repeated with endless iteration from Bacon, the Wise, who started in life with the splendid declaration, "I have taken all knowledge to be my province," only to be distanced in spite of his unrivaled talents and tireless industry by inferior men who attempted less, down to the business man who failed yesterday because he had too many irons in the fire, is that the man who takes for his governing principle "one thing I do" accomplishes more than he whose energies are divided.

The system insures an equable division of the pupil's time among the various branches, and therefore a more equable development. Frequently a class will fall behind the course in certain studies and run ahead in others. It will almost invariably be found on examination that the one in which they get ahead is the teacher's favorite, and the one in which they fall behind that in which he has least interest.

It is sometimes urged that there is a loss of time in passing from one room to another and in getting settled to work, and from the inability to use profitably any scraps of time that may be left after the recitation is over. I believe it is the custom in some of the schools where this system prevails to dispense with recess for the rotating classes, and by doing so and allowing five minutes for each change the time consumed is no more than where a recess is given. But it requires a little time to change from one study to another by any system, and the

stretching of limbs and momentary "let up" in the grind often means the difference between dull, listless pupils and bright, cheerful ones. The teacher who has gone into the lesson can usually estimate very accurately how long it will take to finish a lesson and can be trusted to see that there is no waste. There is usually enough supplemental work that can profitably be done on a lesson to occupy every scrap of time that the teacher can get for it; indeed, the main trouble is not how to get work to fill out the time, but to get time to accomplish the work desired. When time does accumulate on the teacher's hands, if he is worthy of his position he will be found to possess resources enough to employ it profitably, irrespective of the system by which he teaches. Both teacher and pupil learn to work fast, and rapid work—not slurring work, but the work that flows from a quick, alert mentality, conscious that the period allowed for accomplishing the task is short—is the best work; the minutes take on a larger value, and the consequences of wasting them are made apparent; the pupil learns the value of finishing his work on time, knowing there is no period allowed for overlapping.

Two of the problems of the system are what to do with the bright pupil who finishes his work ahead of the class, and what with the slow one finishing behind. But these problems worry us under the class as well as under the rotating system, and must be met largely in the same way—by the ingenuity of the individual teacher. I believe the objections have been successfully met in those schools that have adopted the rotary system, and can always be met by a resourceful teacher.

The teacher under the rotary system becomes a better judge of values. He learns what is and what is not essential in his specialty in order that this year's class may be prepared for what they will be called upon to do next year. When a new class is put into his department he has the entire course for several years constantly before him day after day, and can so shape the instruction as to make it tell on the balance of the course most effectively. He learns to economize time—to get through in ten minutes with what formerly took half an hour; to dispense altogether with many inconsequential things, and becomes familiar with a thousand helpful expedients.

Other advantages are the economy effected in schoolroom appliances. All the apparatus and aids in any one study may be gathered into one room—quite an important item where an

institution has but a slender purse; the better cultivation of the social side of the pupil by doing away with some of the shyness and awkwardness natural to those who meet but few people from the larger world; the relief from tension afforded where a teacher has had trouble with one of his pupils; the relief from monotony to pupils by a change of surroundings, and to both teacher and pupils by a change of faces.

By far the most serious objection brought against the system is that the language of the pupils suffers. If this could be shown to be true it would be sufficient to condemn it, whatever its advantages in other directions might be, for we all recognize that the most important as the most difficult part of our work is to give the pupils the ability to use the English language. But I do not believe that the charge can be sustained. The pupils should be pretty well grounded in the elementary principles of the language by the time they reach the rotating classes, and in these last years at school it seems to me that the services of a trained teacher, with a presupposed capability in this line equal to, at least, if not superior, to that of the best of his fellow-teachers, should be particularly valuable in the language department. In the last years of the course—as soon as such studies as history and geography are taken up—new words, idioms, phrases, and language forms pour in with bewildering rapidity, and to handle this mass of new material successfully taxes the powers of even the best-trained and most experienced teacher. It would appear also that the fact that the language course remains for years in the hands of such a teacher, with his experience with classes just ahead to guide him, could not fail to be of advantage. There is room here, certainly, for the work of an intelligent principal in directing the course, and for a loyal holding up of the language teacher's hands by his coworkers under the system, but it is hard to conceive of a conscientious teacher without some sense of responsibility for the pupils' improvement in language. It is impossible to conduct a recitation in a class that has reached the rotary stage without a reasonably accurate use of English; and no matter what he teaches, each member of the system finds himself still, to a great extent, a teacher of language. The language work is apt to be quite as well done as it would have been under the class plan. Even if it be conceded that it is not all it should be, it must be borne in

mind that the teacher, by the other system, sometimes grows weary of correcting errors in English while conducting a recitation in history, and is guilty of some sins of omission of his own.

In what I have said of the advantages of the rotary system I have taken it for granted that the conditions were favorable—that the school is a large one, where it is possible to grade the classes closely and where the upper classes are constantly full. In a large school there is a better prospect of finding among the corps of instructors the very one to fit a particular position. The system loses many of its advantages in a small school, and I am inclined to think that it should not be attempted in such. And the best success is possible only where the teachers under the system favor it and are willing to cooperate with one another.

THE ROTATION OF CLASSES.

[By Francis D. Clarke, Michigan.]

As an excuse for this paper I wish to say that it was prepared by request; and very possibly the request was made of me because it is well known that in opposing the rotation of classes I stand with a small minority of teachers of the deaf.

Theoretically I am not at all opposed to such a rotation; nor for that matter am I opposed to it in practice, except in the Michigan school. Very possibly in a few years circumstances may so change that I may think it wise to give it a new trial.

A short statement of the reasons why we abandoned the system in Michigan some five years ago, a statement of the good done to our school by the change, and a pointing out of the circumstances under which we may think it wise to resume the custom, will be all that I shall attempt in this paper. It will necessitate some plain speaking and may possibly hurt the feelings of some, but it is not so intended.

The circumstances in Michigan may not at all agree with those in other schools. At the time we abandoned the system in Michigan oral work was receiving very little attention. There was one oral class of three or four grades, and one articulation teacher who taught pupils taken from the shops. The intention to extend this work, especially to form more classes which should do their school work by speech, added greatly to the trouble of classification. The school was small

(only 278 in attendance), and in order to furnish pupils for eight classes it was necessary to begin to "rotate" in the sixth grade. There was not any provision for a principal to have charge of the whole department, and there were a number of pupils who could not, even by the greatest stretch of the requirements, go into the rotating classes. These were formed into two "ungraded" classes and given to one teacher. They did not "rotate." Of course no one expected this teacher and these pupils to be very enthusiastic about the system. And they were not. The pupils especially were entirely devoid of any ambition or hope of doing the work done by others. Everyone else "rotated," and they did not.

Of the other teachers, one taught exactly such branches as he liked to teach; two had some studies that they liked, and some that they did not care for, and one did not have anything that was what he thought he could do best. Their enthusiasm was in exact proportion to their liking for their work. Each teacher had four periods a day. Two of these were devoted to bright classes, on whom they worked hard, and by whom they expected to be judged; two periods were devoted to "dumb" classes. These were by no means dull pupils, but not as quick as the others, and getting slower all the time, because it was generally understood that not much was expected of them. No one was responsible for them. No one expected to make any reputation on them. No one cared anything about them.

The system was remarkably inelastic. If a number of pupils were ahead in one study or found that they could do their work in it quickly and easily and were behind or slow in another, the time saved on the first could not be given to the other, because that teacher had another class.

The objection which I have so often seen made that time was lost in changing classes did not apply, as the changes were made promptly; but, on the other hand, pupils would study hard for one teacher and entirely neglect another. Then, too, the teachers constantly found fault with the work done by each other. One wanted a particular drill in language given by another, so as to help his work in history or geography. Another wanted some subject in arithmetic taught, so that his pupils could understand their work in physics. Time was constantly lost by the necessity to stop work on the second, when frequently several more seconds were needed to finish the sub-

ject under discussion. The whole tendency was toward the concentration of effort on the brightest pupils, toward mechanical exactness, and toward neglect and suppression of unwilling or backward pupils. With the exception of a class or two the whole school was badly behind their grades in arithmetic.

I firmly believe that a teacher of the deaf has a much wider field than the public-school teacher. We must get much nearer our pupils. We must do for them many of those things which are done for hearing pupils by their parents. Character building, the development of right feeling and right acting, as the result of right thinking, is a part of our work, and excuse me if I say that each year that I live I am more and more convinced that it is much the most important and noblest part. The teacher who does this should be praised and encouraged, even if he does not have a class whose percentage in studies is quite as high as some others. Anything that hampers the work of a teacher in this nobler part of his work can not be endured. He must know each of his pupils thoroughly. He should be the intimate, personal, confidential friend of each. Our teachers are such now, but if pupils were trotted through their class rooms at the rate of a dozen an hour this work of the teacher would be greatly hindered.

There comes, or at least there should come, a time in the life of a young person when independence of thought and action should be cultivated; then possibly it may be best to destroy the close communion between teacher and pupil. It does not, however, come as early with deaf children as with hearing. It certainly does not come as early as the sixth year in school. Even our city high schools do not begin to "rotate" their pupils before the eighth or ninth year, and the reason they assign—special teachers for special classes—does not exist with us.

Should the time ever come when we have enough pupils over the tenth grade pursuing studies that require special training in the teachers to keep two or three or more teachers busy, if they can be so graded that it will not interfere with the speech of those who speak, we may have a system of rotating classes, but till then, as we flatter ourselves that every teacher in the Michigan school has the education and ability to teach our highest class, we will probably stick to our present plan of having our teachers teach classes and not subjects.

SUGGESTIONS ON MORAL AND RELIGOUS WORK.

[By Dr. De Motte, Indiana.]

I am confident I shall not make a blunder in referring in a prefatory way to the well-known fact that the pioneers in our profession—the men who took the initiative in founding institutions for the education of the deaf and promoting the work in them—were preeminently "men of God;" men who acted under the influence of the impulse of a divine commission, and sought in the Christ spirit to do good "unto the least."

And further, that in their choice of coadjutors and assistants, they sought out those who sympathized with them in their estimate of the work and were ready to cooperate in carrying out their plans. Everything goes to show that they recognized the moral nature of their charge, and esteemed its education and training of paramount importance.

We are gratified to-day that we recognize in active service many worthy sons and daughters of such worthy sires, and see evidence almost everywhere that this great department, the moral and religious instruction and training of our pupils, is not ignored nor neglected. May the time never come when our work shall degenerate from a broad, generous, loving purpose to enlighten and elevate the humble children of our common Father to the hard, narrow, heartless philosophy which seeks by experiment to reach, arouse, and train into a sort of mechanical activity the purely intellectual nature of those in our charge; seeking rather to enrich the records of science with accounts of new achievements than society with noble, useful characters. We can not afford to undervalue science, or depreciate the work of the purely scientific in the way of discovering and intimating best ways and means, but they must be regarded as instrumental in our work, making way for those more advanced and better agencies and operations calculated to lift the spirit Godward, where it can perceive and accept its relations to God and man in time and in eternity.

It is a natural work—a natural development conducted through natural processes, but we must accept and take in the supernatural or we are not doing the whole work. Indeed, we are neglecting the greater while attending to the less. Oh, we need science, and to know all the deepest researches can give us and to have all the tools and helps ingenuity can invent, but we need them only as and so far as they are helps

enabling us to reach and accomplish our real work—the development and training of a true manly, womanly character.

Successful in our efforts to wrest our work from the sphere of the so-called "benevolences" of the State and place it where it rightly belongs in the purely educational, we need to be careful lest we forget the almost incalculable disparity of our pupils in this respect. Lacking all that comes through the ear and much through the eye for want of explanation—from parents, friends, associates, the Sunday school, and the church through the years of infancy and childhood—they look to us for all they might have received had they been perfect. We are not overestimating this department nor overmagnifying our office. We have no apology to offer for obtruding its importance upon your attention.

We would not overestimate this disparity, and certainly we should never allow the recognition of it to discourage us—to lead us to think we can accomplish but little and excuse us from our utmost efforts. Rather it should, in revealing to us the needs of our charge, inspire us with adequate resolution and determination to meet the demands. One of the worst notions a teacher can entertain is that little can be expected of his pupils. It is not only disheartening, it is criminal.

In approaching this subject, as almost any other department of our work, we are confronted by a multitude of axiomatic or epigrammatic expressions—the crystals of past investigation and experience; cold, clear, beautiful, they excite no more sense of obligation or gratitude than the lines of the multiplication table. Self-evident, they stand before us, not even challenging our acquiescence, knowing that that must be given. "Proceed from the known to the unknown," strikes one precisely as "five times five are twenty-five." We simply know it, and have no thanks for our informant. Such are valuable as statements of condition and fact, but a single suggestion of a practical character which will shed the least light upon the how of operation is recognized with gratitude by one seeking information. Now, if in this brief trespass upon your time and attention I shall say anything which will assist in actual work, anything in the nature of illustration or suggestion which will make one more active or more skillful, I shall have done more real good than if I had displayed before you a thousand glittering crystals. What you and I need is effectiveness, and whatever will give or increase that is desir-

able. A single brick or block of building stone is of more value to the builder than a cart load of gems.

Our lives are spent in direct and continuous contact with three, and only three, individuals—self, others, and God—and all our relations and duties growing out of such relations are with these three. We can know, esteem, treat these, and only these. There are no others for us to love or hate, to serve or despise.

Thus we have the entire work of moral education and practice for all, child as well as adult, laid clearly out upon three planes. The center of the inner and smallest circle, the beginning, is self, with all we ought to do for self to make it clean, inside and outside, intelligent, amiable, noble. The thousand and one lessons self needs to learn about itself, of its faults and virtues, its possessions and its deficiencies; what it must suppress and what cultivate; what it must condemn and what approve; what hate and what love; what shun and what accept; how behave itself toward itself, and the reason and consequences of all, afford themes for lessons upon lessons which are susceptible of being graded to suit the capacity of all, from the lowest to the highest. We should take up these first, and dwell on them long and frequently. Surely to know one's self is of first and greatest importance.

In the course of such lessons reference will be presently made to others. The circles are concentric, that of relations to others being but an extension of that of self. The interests of self are guides to the interests of others; duties to self point out our duties to others. So, after teaching a child what he must do for himself to make himself comfortable, prosperous, happy, he is ready to be told that the same is required of him in his conduct toward others. As he regards himself, his interests, his rights, his property, so must he regard the wishes, interests, and rights of others. In a word, what he would choose for himself he must choose for others. Here comes in the interminable list of lessons on truthfulness, fairness, honesty, generosity, compassion, sympathy, and love toward not the great world, everybody, including the heathen of the other hemisphere, for he does not yet know them, but first and rather the little world of his acquaintance, from the tiniest insect, worm, to the birds, the household pets, his playmates, his schoolfellows, his teachers, his parents. What a field! And

how many lessons it affords! But there is a wider, for which a full knowledge of these inner circles will prepare him—the circle of his knowledge of and duties toward God.

About the one center where we have drawn the small circle of self, in which we have found great need of many and persistently taught lessons, and about which, as we advance, we have drawn the larger circle inclosing duties to others, there spreads an infinite area, a boundless space covering all, containing all—his duties to God. In entering this field know that you can never cover it; but do not therefore dash into it haphazard. All is good, all needs to be known, all should be taught, but you will do most and do it best if you proceed systematically, and much after the plan pursued in the smaller and inferior spheres. The gradation is perfect. First talk to and with a child about what he is, what he can do, what he should do, what he likes and dislikes, and the duty he owes to himself to be and do his best. Then, about others, what they can do, what they like and dislike, and hence what he owes to them. He is quite ready to enter the larger sphere, and attend intelligently while you tell him of God, what He is, what He can do, what He likes and dislikes, and of his own duties toward Him. Let the child first learn to recognize himself in his relations to himself, and to acknowledge his duties to himself. He is then capable of sensing his relations to others, and his duties, and as you advance you develop capacity to understand, to an extent, the nature of God, and of his relations to Him, at least to know what He approves and disapproves, what He commands and forbids; and he will be pleased to find out that himself—that is, his better self—and the best of those about him are like God in so many things, that God approves of all the good things you have taught him to do for himself and for others, and he is ready to do the same toward God. He comes to see that himself and all others are involved in their being and conduct in each other, and all in God; that all he does for the good of himself or for the good of others is for God. As his education progresses you will find him stepping from one to another of these three circles in testing everything. Not satisfied with the thought of self in relation to the subject in hand, he asks, How will it affect others? What will God think of it? He finds that the best in himself is the best in others, and is such as God is. The best things he can

wish for himself are what others wish from him, and just what God approves. What he does not like is what others do not like, and what God condemns.

You say this course is presuming a correct moral judgment in children. No; but the possibility of constructing such a condition—of educating and training a reliable conscience. No one is naturally reliable, and the best of us are quite faulty.

Tell a child in the most awful style you can assume, "God says—and it was carved on stone—'Thou shalt not steal.'" He is awed for the time by the force of presentation, but the impression rapidly weakens, and often disappears entirely when he finds he can neither perceive God nor realize that God perceives him, and can experience no effects of his condemnation or approval of his conduct.

Sensualize the matter. Here is your pencil. Shall I steal it? Will you be displeased? Why? Here is Robert's pencil. Should you steal it? Will he resent it? Why? The act of theft is just as bad toward him as toward you. It is simply wrong, and so God gives us the rule, "Thou shalt not steal." The suggestion that he and Robert are equal is a good thought, and that God's command is designed to secure the advantage of both alike.

Now and again you will find a rough nature—a child who from deficiency, neglect, or abuse does not care enough for himself, his character or reputation, to make the operation of the Golden Rule possible. Not caring for personal loss, pain, or inconvenience, he will not be considerate of others. In such cases one can only step back and down a little, maybe a great way, till he finds something in the nature of a solid upon which he can build up. You can always find it. You will surely never succeed by thundering at him the commands of God. If he has no regard for those whom he can see, there is no reason to expect him to regard a Being whom he can not see.

The course I am indicating tends to unify his notions of the right. He finds it is not alone what he wishes, but what others wish and what God demands. What he should do is precisely what everyone else should do and what God does. So he comes to think of himself and his conduct as connected with all about him and the great God above him, and rises from the natural to the moral, and finally to the religious.

These steps are graded in height as well as extent. At first little inexpert feet are not able to mount the higher; but time

and careful assistance will soon make it not only possible but habitual. Do not place the child at the top and daze and bewilder him with annunciations of the divine attributes—His omnipotence, omnipresence, omniscence, or even of His love. He can but stumble in the effort to take in what is in a measure incomprehensible to the most mature mind. If he believes what you tell him, his mind is injured in the act of accepting without due intellectual conviction; and if he does not believe, his moral nature is harmed by rejecting the truth, thus preparing the way for skepticism. At best it is seed cast into unprepared soil from which no harvest can be expected.

If you start on the second step, introducing first duties to others, the child feels the consideration of others is a hardship to himself, not having been taught that his own rights constitute their duties and entitle him to the same consideration.

Let the order of natural acquaintance stand; do not interfere with natural preference. Self is first, our mates nearer to ourselves than God, and He greatest and embracing all.

One of my neighbor's boys, a bright fellow of 12, attending the Sunday school of a church noted rather for breadth and liberality than for strict orthodoxy of teaching and methods, was asked by a very zealous Christian lady, "Well, Jamie, what are you doing in Sunday school?" "Oh, we have nice times, a good teacher, and I am learning lots." "You have the regular lessons, I suppose?" "I don't know. Last Sunday she told us about General Grant, how he hated meanness and planned carefully, and how brave he was to carry out what he thought right. Sometime ago she told us about Mr. Longfellow, who wrote, she said, so many books, and never a bad word in them all; and about Gladstone and Mr. Lincoln." "Has she told you nothing about the one only perfect man?" "Who?" "Why, Jesus, the God-man?" "No; but I guess she will come to Him later on."

And now for a few practical suggestions. These can not be numbered or dated. The condition of your pupils as to age, intelligence, previous advantages, etc., must determine your matter and time. Seek to make your work thorough—effective on the pupil's character; and then plan to get in all of the best you can. Recall the last lesson, and how well it was done, as you prepare the next. Think more of what your pupils have done, and so what they can do, than of what you wish them to do.

Persons never graduate in morals. There are no limits to your work. If you grasp the situation properly, instead of the puzzled impatient interrogation sometimes heard, "What can I find to occupy the Sunday hour with my pupils?" your cry will be, "Dear Lord, inspire me to choose among the mass before me what, and so much as, will do them the most good and please Thee, whom I wish to serve in all things."

1. Make your teaching positive rather than negative. Simply saying "Don't do wrong" will not lead a person to do right. Pulling up weeds will not cause good vegetables to grow; though it will give you a chance to plant them.

2. Let your stories and illustrations be rather about the good than the bad—lauding virtue rather than exposing vice. Cultivate the love of the right rather than fear or disgust of the wrong; still do not neglect the latter.

3. Always be serious—pleasantly serious. Insist upon the good and the right as what must always maintain, never allowing the contrary in any case.

4. Shape your work toward the development of the moral nature, that as soon as possible you shall have a resident supporter to every proposition. Your work is to educate rather than instruct; to create an ability to decide and act upon moral questions rather than to communicate moral facts and rules.

5. In your work do not shirk responsibility. You can know the truth—allow no doubts. To many, all in a sense, you stand in the God-place, and they look to you for what God has for them. Your bearing toward them must always be adequate to this dignity. Their respect for you, their confidence in you, must be equal to this relation. As support, use constantly the Bible. Keep a convenient copy on your desk and constantly refer to it, showing them the words, marking the passages plainly, and, when practicable, have them memorize.

Many of them can be induced to procure Bibles and to imitate you in this. This becomes a very serious matter. Standing for a parent to a child who is barred from communication with its natural parents is a weighty charge; standing for the Heavenly Father is infinitely more serious. You need to bring yourself fully to comprehend what it signifies, and humbly to accept it. Children need a visible leader. Be loyal, religious yourself, and you will not fail to inspire them.

Have great care, however, that you do not create the im-

pression that you are God. That the child does not think you are teaching simply what you know and that his whole duty is to obey and please you. What old divine spoke of "Hiding behind the Cross?" That's just what you need to do constantly.

I desire to relate a little incident which came under my observation and will illustrate what I mean. A little boy about 11 years old was sent to me for reproof. He had been fighting and when I spoke to him he seemed sad about it. I said, "You have been fighting." He said, "Yes, but I will never do so again." I said, "Will you go and tell the boy so?" and he said, "Yes," and I excused him to go, but when he got to the door he turned and hesitatingly said to me, "Please do not tell God." I said to him that God knew all about it and that he had seen the transaction, and I said, "If you are really sorry and will never do it again I will ask God to forgive you." Then I said, "Shall we tell him that you are sorry?" and he said, "Yes." So we knelt there together and told God about it. He went out of the door laughing and I had no trouble with him afterwards.

6. Distinguish carefully between faults and sins, being careless of dress and untruthfulness and rudeness and theft, and never exaggerate, either in setting out the fault or the palliation. Express your own disapproval and, if necessary, administer reproof or punishment and grant forgiveness, but not as if you alone were the arbiter. Let him feel that you are acting for another—God. Enforced obedience of one human being to another is humiliating, degrading. Obedience to God is always elevating, ennobling. Many a young man or woman becomes ashamed of his religion as he comes to maturity, because it consists solely in doing what others have compelled him to do. He does not recognize loyalty to God and the right in it. In "putting away childish things" he ceases the practice of the lessons of a father's wisdom, and the sweet safety of a mother's prayers. He has given them enforced acquiescence as from the human beings who had control of his minority. He has had no thought of the nature of the acts themselves, nor of the God of morality and right. In his emancipation from the human there remains nothing to control him. Insist upon the right because it is right. Refuse to allow the wrong because it is wrong. If you think they need the influence of example upon precept you can tell them

you prefer that way, other good people prefer it, and that the great God so strongly prefers it that He has commanded everybody to do it, "See, here it is in His Bible."

Guard against extremes of severity or softness. It is possible to make the way of right conduct so difficult and unpleasant as to be discouraging, even cruel, and also so easy and purposeless as to be "spoiling" in its effects.

Now let me relate another incident to illustrate the other extreme: In one of the rooms there is a hubbub and a great trouble. John steals one of the boy's knives and it is found in his shoe. The teacher has taken the knife away from him and boxed his ears and further punished him by standing him on the floor. The two boys are looking daggers at each other. In another room all is different. The teacher is crying and the children are crying. The teacher says, "I have put it in my desk until I can go to town and buy John a knife just like it, so that he will not be tempted to steal this knife." I want you to avoid these extremes.

8. Avoid variableness. If right is always right, you must always be its promoter, its exmeplar, and if right conduct is to maintain, you must always secure it. Consistency is strength; vacillation, weakness.

But you begin to say, "Ideal! He expects us to be more than human." I do; and the aim of this paper is to produce the impression that the teacher must be his own human body, soul, and spirit cultivated to its highest extent and used to the best advantage plus the Divine grace which God gives to those devoted to His service.

THE SELF-RELIANCE OF THE PUPIL.

[By Dr. J. H. Brown, Illinois.]

The ancients said, "Know thyself;" modern philosophers say, "Help thyself," but we, as modern educators, having the advantages of the experiences of the past, say, "Study children."

In the earliest years of childhood the child is a dependent being. Of the young of all the animal creation the human infant is undoubtedly the most helpless. Born into the world, he depends on others for a longer period than the offspring of any other creature. His very existence rests with the parents. From them, or others who act in their capacity, must come food, clothing, protection, and training. The neglect to provide

these rights to the infant may stultify its development and as a sequence hasten its death. There comes a time, however, when he must walk alone; must provide for his own existence, otherwise he will remain a perpetual overgrown infant. His earliest lessons must be from experiences with the external world. He begins at zero. His teachers, however, be they relative or stranger, sow seeds in the virgin mind which will mature in time, forming character, developing intellect, and shaping the destiny of the child. The success attained in these efforts can not be measured by any known limit, extending into the past, embracing the present, and reaching into the future—in fact, estimated only by eternity. Every thought, every word, every act, every piece of food the child eats has an influence upon the life. What grand opportunity! What great responsibility!

Intellectual growth is from within. Growth is the result of action. The greater the desire to do, spontaneous self-exertion, the greater will be the development. How shall we bring out, develop, encourage, and stimulate this personal effort, this self activity?

The proverbial child is full of activity. It is his delight to be doing something. He is occupied in the pursuit of the useful or following along the lines of mischief The pathologists in modern pedagogy would place laziness in the category of diseases. The lazy child is not a natural child. He is the exception, though I sometimes think the disease may be easily contracted. If the inborn self-activity could be developed and strengthened, we would have done much toward the success of self-reliance. Concentration of mental effort is necessary to mental strength. Like gunpowder, to be most effective it must be aimed at one point, and continued till an impression is made.

The school has aptly been said to be the place for a child to unpack his intellectual tools, and the training he gets while there serves but to put temper into them.

That the child may become an independent factor in after life, I think to attain this point in the most satisfactory manner the teacher must study the child—a study which should embrace his mental, moral, and physical aspect and development—know what he knows, and know wherein he is deficient; in truth, take a balance sheet of his whole "make-up." This is our foundation; it is his capital.

Do nothing for the child that he can do for himself. Begin where his knowledge ends, add to and expand—build—you direct, the child to do the work. It is a fact that with many teachers this order has been reversed. The pupil depends on the teacher for the explanation of every new step, the definition of every new term or phrase, and the teacher gratuitously offers assistance, stultifying any independent effort on the part of the child. Indolence or inattention may cause the pupil to ask for the meaning of a word, or whether you add, subtract, divide, or multiply in the solution of certain problems. The teacher, like a larder filled with edibles, underdone, furnished with an automatic button, furnishes the required mental food when the button is pressed by the pupil. Simply telling a child a dead cold fact, without his knowing any reason, or without his having the faintest idea of the meaning of the problem, is not good teaching. Questions should be of such a character as to call forth observations, the evidence of the other senses, memory, and the linking of facts together, in fact anything to make children think.

Self-reliance involves self-confidence, which must be built upon a proper foundation of knowledge. When a child knows a thing absolutely he can see it from different side lights and understand it as correlated to other things or facts. Self-reliance is an element of slow growth and must be based upon image concepts. In my talks to my children I depend very little upon books. Books may contain matter which serves as a shooting mark, but new words, new phrases, and different ways of expressing an idea should be a part of every lesson. By this method the child's vocabulary is increased, the ability to read with ease and intelligence is strengthened, confidence is gained, and this becomes the chief factor toward self-reliance. He reads with ease because the thread of the context is not lost while grasping the meanings of the words. Thinking must go hand in hand with reading. This is absolutely a necessity. It is the fundamental essential in the training of our boys and girls to become men and women, and their future progress in the practical affairs of life will be in proportion to their thoughts. Everything in the world is the result of thought.

Encourage self-research. This will entail labor. Labor produces growth with its accompanying element, strength. Effort expended in this spirit of self-research will depend

largely upon the interest aroused. In the present crisis with Spain every scrap of printed matter relating to the war is eagerly devoured. The armies are followed, their commanders are known, and results are anxiously waited for. To the pupils it is as a living reality. They can tell the qualities which make one man a hero and another a coward. Of course, we can not always have a war to arouse this enthusiasm, but in the schoolroom devices can be used. Any scheme or plan which leads the child to find information himself will have the desired effect. Facts become living things, memory holds them because they are put there when the mental action is at white heat. This spirit is infectious, and the schoolroom becomes a bulletin board where each child has some news to communicate.

Naturalists tell us that when a lobster is washed by a high wave on the dry sand he has not energy enough to work his passage back to the water, and unless another wave, higher than the one which stranded him, comes to his assistance, he dies. I fear that much of our teaching occasionally has been to make human lobsters of our pupils. Constantly telling them—piling dry leaves in their brain—is it any wonder when an emergency comes they are stranded on rocks and can not pull themselves together? Another hindrance to self-reliance is covering too much ground—going too fast. Retrospective glances into our own experience convince us that imperfect knowledge weakens confidence. Patience is nature's method. Just as eating too fast—imperfect mastication—causes indigestion with its counter malady, a want of assimilation. The same law applies to mental assimilation. When the matter is crowded, mental dyspepsia occurs, and this must be followed by imperfect development of thinking power. Growth and development, where strength is required, must be slow. The oak which flourishes in the forest and impresses us with its magnificent grandeur has more strength than the weed of a few summers. While the range of our teaching covers too much ground subjects are not properly developed; the work must be superficial, mere outlines or skeletons instead of well rounded wholes. Subjects should be correlated one to the other—component parts around one grand center. It matters not what that "center" should be—literature, reading, mathematics, or nature studies—the aim should be one fitted into the other, developing the central idea.

Again, be what you wish your children to be. "To be rather than to seem" is a good motto. The spirit with which a teacher goes about his work influences the children. I have seen a dull, listless class transformed into a spirited, enthusiastic, and self-active one under the guidance of a thoroughly live teacher, and a poor, half-dead teacher, doing his work in a perfunctory manner, will take the life out of a healthy class in a few weeks. Either spirit is infectious, but the self-reliant teacher makes the self-reliant pupil.

A few years ago a gentleman friend of mine, who was superintendent of the schools of a neighboring city, wished to make "reading" the great central idea around which all other studies were to be focused. He desired to limit the study of geography to just what the teacher knew about the different countries, without the aid of any text-book, and there was not a teacher in the city but who acknowledged he or she knew very little about the geography of the continents outside of North America. Imperfect knowledge in the teacher must lead to imperfect knowledge in the child, which is a hindrance to self-reliance.

Again, fortify the child's weak points. Strengthen the bridges which are to help him over. Impress the corrections by frequent repetitions. A right habit can only be formed by the frequent performance of a right act. The child's moral nature may be distorted. His home environment may have been unfortunate. There is only one way that I know of to correct this defect. Know the child as you know your own nature, and suit the right words or the right acts for each and every emergency.

Use nothing but good English to or before the children. That is what they must rely upon when school is over and they go out into the active duties of life. The only way to acquire the easy, free, and correct use of the English language is to use it constantly for the actual demands of life. Children often have good ideas, but are unable to express them.

Do not teach principles or rules until they can use the language involved in the principle with freedom and accuracy. What would you think of a person learning to ride a bicycle from a set of rules? It would be absurd. This idea will also apply to teaching definitions. Fancy a child asking a teacher what a sled is, or what a wagon is, and the teacher says, "A sled is an apparatus on runners used by farmers in winter for conveying persons or different articles over the snow." The

child does not nor ever will know what a sled is from any definition. Show him a sled or the picture of one and tell him it is a sled; image concepts first, as a foundation. That is something he can rely on. Why is it in our everyday life we see boys and girls matured men and women while in their teens, while other young men and women are simply overgrown children at thirty? There is something in their early training and followed up by further teaching. We may call it tact, personality, individuality, or animal magnetism if you will. By means of it, without apparent personal effort are developed the finer feelings, the higher aspirations, and the nobler qualities of true manhood and true womanhood. There seems to be a spontaneity on the part of each and every child to do right because it is right. As a traveler going across the continent or on a long journey makes side trips to view new landscapes, see nature from many side lights, and collect mementos, thus adding interest to the trip and placing it effaceably on the memory, so we can in our talks sandwich in much interesting side light to clinch the subjects upon the memory. This will develop the elements in the child's nature which will lift him to a plane where he thinks and acts for himself and bring out his moral and intellectual responsibility and self-reliance.

DISCUSSION.

Mr. J. L. SMITH. Mr. President, three years ago we had the rotary system in the Minnesota schools in the higher classes. During two years of that time I had charge of the work and I observed very carefully the results, because of the discussion on this subject. Speaking from my own observation and experience, I would say that in arithmetic, language, history, and geography the pupils made better progress than they had previously made under other systems. I believe that under the right conditions the rotary system is the best for higher classes.

The right conditions are, first, that the teacher must be capable, and second, that the classes must be well drilled.

Miss COBB. I would like to say a word about the Christain Endeavor work in our schools. I had charge of this work for two years. I find that this is a good work to introduce into our institutions. It is very healthful in every way to the children. They learn to make original prayers. They make good progress in spirituality and in kindness.

I know that it is difficult to make them understand and pray an original prayer. But they select words that they desire to use and ask you for these words. I think that the Christian Endeavor work is specially fitted for introduction into our institutions. Meetings with us last for about half an hour.

Mr. ARGO. I want to add one word to what has been said in regard to Christian Endeavor work in our schools. I think that it is a good thing.

I was talking with a gentleman in Kentucky about this work, and he regards it as one of the very best things in the school. He said to me that it had done more good with them and in their school than any other one agent.

Mr. DOBYNS. Mr. President, I agree exactly with Mr. Argo in regard to the Christian Endeavor work. I find that it is very helpful to us. I find that very frequently our pupils tell me that some one of the boys will say to another boy, if you are not good and do not do right you will be expelled from the Christian Endeavor Society. This has good effect upon the school, and it has been a success with us in every respect.

I think it is an excellent thing to have a standard of conduct in your school by which pupils may measure and regulate their conduct.

Mrs. ZELL. A Young People's Society of Christian Endeavor was organized in the Ohio Institution in 1892. The movement began among the girls, but soon spread to the boys' side. At first the meetings were held in separate rooms, but now are being held in the chapel every Sunday evening. The effect for good has been wonderful, not only on the playground but in the schoolroom. Attendance at the meeting is optional. Almost all the older pupils attend the meetings and take active part in them.

The little ones have been organized into a junior society, which meets every Sunday afternoon immediately after Sunday school. The meetings are conducted by members of the senior society.

At the regular meetings on Sunday evenings short talks have been given by the superintendent, principal, teachers, and the old pupils living in the city.

Mr. FRANK READ, Jr. I want to say, too, that I think that the work of the Christian Endeavor Society is a good thing for the children. They learn something about the Bible and good morals. It is often said, and I have thought so myself, that the Bible is a sealed book to the average child. In this

society they learn passages from the Bible, and I think it is valuable to the children. I want to ask how to get children to read the Bible understandingly.

Mr. DOBYNS. Mr. President, with regards to this one thing, I want to say that our Christian Endeavor Society has done a good thing. The children memorize and recite phrases and passages from the Bible, and they hunt up verses that they want to speak on, and this is done by nearly all of them. I am sure that the work has been a great help to our institution.

Mr. CALDWELL. I want to say that in some places they have a book containing selections, which they consider is especially adapted to this kind of work. They have a book of selections in the Northampton School for this very purpose, and I am certain that the result of the work has been entirely satisfactory in every respect.

Mr. BOOTH. Our practice is for the teacher to teach a Bible story to the children, taking the Bible itself, finding a story in the Bible, and then underlining the lines or sentences or words that virtually tell us the story. Let us suppose that it is a miracle that Christ performed. Let the child see that the story is from the Bible, and that gives him a greater interest in it, and he feels that he is learning the story from the Bible itself. I find that this is a beautiful practice, and has been successful with us.

Dr. DE MOTTE. In chapel exercises select a story or verse from the Bible and tell them plainly about it, so that they know that it is from the Bible. With us this is not a daily exercise, but is used occasionally.

After several questions from the question box had been answered, the chairman asked Miss Griffin to tell the convention about the Cook County Normal School.

Miss GRIFFIN. I would like to say a word or two. I am not a public speaker, and would much rather speak privately. Some of our teachers have been attending the normal school this summer in Cook County, Chicago.

This school, as you know, is in charge of Colonel Parker.

We think that the work of this school is as well adapted to deaf children as to hearing children. I wish that all the members of this convention could see the work in this school. The work that especially impressed me was the primary work. It seemed to me that it was the best work that I had ever seen.

The children were taught to express ideas from art, clay

modeling, and water colors. But they had written language before expression, and the work in that line was quite wonderful indeed.

I am sure that the work in this school has been of great advantage to every teacher who attended it. If I had known sooner I would have had Professor Julian to address this convention. I think that he would have inspired you. I think that the study done in this Cook County Normal School appeals especially to the deaf children.

The work in the Chicago schools was also very good. I can not tell you about it, but I wish you could have heard those lectures that we heard during the three weeks preceding this convention. I am sure that you would have been delighted with it.

The meeting then adjourned.

AFTERNOON SESSION.

The meeting was called to order at 5 minutes past 2 with Mr. Caldwell in the chair. Twenty-five minutes were given to the question box, and then the regular papers were taken up.

PATRIOTISM IN INDUSTRIAL ART TRAINING.

[By Gabriella Marie Le Prince, New York Institution.]

Patriotism in art suggests at first monumental statuary, triumphal arches, and the stately domes and pillars of our capitols; why not also the things of everyday life, including even the fireplace tilings of the "homes of the brave?"

When our towns are decorated with flags and bunting for a great national rejoicing, whose patriotism is most appreciated, that of the people who own the most expensive flags or of those who show some artistic and individual arrangement of their colors?

It is all the same old Stars and Stripes, but the Vermont display differs from that of the Carolinas as the people's tastes and customs differ, and that expression of locality is in art most valuable from a practical point of view.

When you show off the dainty little silver hand on the hatpin you brought from "the other side" last summer, it says Antwerp so unmistakably that you do not generalize by mentioning Europe.

The thrifty Belgians have found a substantial money value in their local fairy tales. To be sure, New York has her "Lib-

erty" souvenir spoons, but the inspiration of the design was imported. There is a good piece of ironwork on the elevators of one of our large hotels, with the city coat of arms as a decorative motive. The "Sons of the Revolution" are making a far-reaching impression with their very interesting bronze tablets, designed by our own artists.

Let us "take the current when it serves." The children were never as anxious to be patriotic as they are now, and it seems a pity to let them fire off all their surplus energy in the form of crackers, or even in reciting "poems," which are too often far from being classic. There is no literature too high or too fine for these little ones to learn by heart and illustrate with their naïve "pictures."

The first requisite in an attempt at ornament or illustration of a patriotic nature is tradition, national or local, and local traditions must be of most value in primary education, as they can be easily grasped by the childish mind.

In the woods near our school is a spring from which it is said an Indian girl carried water to the suffering soldiers behind the earthworks, on the top of the hill, in the war of the Revolution. It is a foregone conclusion that a child will make a better illustration of a story like this, which he owns, than of one taken at random from an ordinary school reader, and if the children do not consider themselves too old to play, the drawings will carry more conviction if they are made after an active imitation of the scene, kindergarten fashion. This last, however, will not be the universal method until the ideal condition of nine classmates to a child is established.

A very large proportion of the children in our schools have no stimulating traditions. Turkey and ice cream for Thanksgiving, candy and toys for Christmas, baseball for spring, and football for autumn form the chief inspiration of their original compositions.

These ideas are, of course, of value in illustration, but are apt to become monotonous and do not offer the opportunity for training in patriotism and civic pride so sorely needed by that large foreign element, out of which we are trying to make good Americans.

The little Germans know their old flag, and still have a half-hearted admiration for the imperial eagles, but their parents are too busy gathering in the gold of the new country to keep alive the customs and traditions of their old home. These poor little ones have no "Mother Goose;" the blue cornflowers

are left beyond the sea, and the golden-rod "a yellow (flower) is to them, and nothing more."

Give them brushes and colors; let them "paint" the trailing arbutus, telling them its story meanwhile. Do not dishearten them with corrections; the flower teaches them in its own way.

As for discipline, show your utmost interest in the model, put it on a moral pedestal, do everything to create an atmosphere of reverence about it, be it rose or onion, and your class will be as far above discipline as art is above the treadmill.

How shall we find patriotic subjects for the primary grades? Take the State flower, and emblems or objects having historic interest. Revive the traditions of the childhood of our great continent, of its arts and crafts, the better to reach the quality of simplicity belonging to the little ones. Once they are eager to express their ideas, it is easy to lead them. Tell them Hiawatha's story:

In the solitary forest
Pondering, musing in the forest
On the welfare of his people.
From his pouch he took his colors,
Took his paints of different colors,
Painted many shapes and figures,
Wonderful and mystic figures.
And each figure had a meaning,
Each some word or thought suggested,
Songs of war, and songs of hunting,
Songs of medicine and magic.
Thus it was that Hiawatha
In his wisdom taught the people
All the mysteries of painting,
All the art of picture writing.

The beauty of line of a Greek vase is too subtle for untrained eyes, but a toy model of an Indian tent suggests action, movement, and fires the young imagination; the children will draw it with all the naive seriousness of the ancient picture writer himself. A toy birch canoe makes a capital model:

From the ground the quills he gathered
All the little shining arrows,
Stained them red and blue and yellow
With the juice of roots and berries;
Into his canoe he wrought them,
Round its bows a gleaming necklace,
On its breast two stars resplendent,
And it floated on the water
Like a yellow leaf in autumn,
Like a yellow water lily.

What could be more interesting than a study of the Indian folklore of one's own neighborhood? Why was this village called Minoma? What is the legend of Winooski Creek? The symbolism of the ornaments of the local tribe? These decorators would not have put "N's" and "B's" on their dinner plates in honor of a man they cared nothing for. Almost every bird and tree and flower in our parks and fields has its legend, the heritage of the children, as much as Bunker Hill and Fourth of July.

These Indian beginnings naturally lead up to pioneer or colony times, an endless fund of material for illustration. Why do the children rank "Buffalo Bill" above even an inspector of schools? Because they can better appreciate his system of instruction. Every detail of his history lessons is remembered. Perhaps this is a type of the education of the future.

The various patriotic societies are giving systematic training to their children in this same "Wild West" manner. They give entertainments in which the little actors represent the valiant deeds and peaceful customs of their ancestors, keeping alive the precious traditions of the good old times. This spirit, extended to the children of our more recent colonists, would help to develop that national art we are so eagerly awaiting.

Surround the school children with the best art can give; not only the Greek, Italian, and Dutch old masters, or modern French ones, but frame for them photographs of the Chicago Fair buildings, and particularly of the details of the ornament of that American architecture.

Show them Low tiles, Rockwood and Volkmar vases, and tell them this is American pottery. Let them see some Tiffany glasswork, some of our best metal and textile designing, making them understand that this art is as valuable in its own place as the pictures in the galleries and the illustrations in the magazines. Let them learn to love it, because it is good art, because it is American art, and encourage them to go and do likewise.

The art spirit is growing wider and deeper every day, and woe betide us if we keep the school children from its best influences by restricting them to narrow and uninteresting lines of study.

The time has come for the whole people to demand art in its broadest sense in national and State collections, and in

illustration, photography, and decoration, which, through the newspapers and magazines, literally reaches every corner of the land.

The school children will decide which type of art is to dominate this output, and we are their teachers.

SHALL ORALLY TAUGHT PUPILS USE SIGNS?

[By D. C. Dudley, Colorado.]

In answering this question I will separate orally taught children into two groups—those who have acquired speech through the ear and those who are acquiring it through the eye.

To the former of these classes spoken language is, we may say, the natural language. Though their outer ear may be sealed to sound, sound still vibrates through their brain. Every word that comes under the eye calls up its corresponding echo in the inner ear, the ear of the soul.

Except in a few instances (those who have imperfect vision or defective vocal organs or indolent habits) this class need never know there is such a thing as the sign language. They are preeminently adapted to pure oral teaching and should in the main make good speakers and lip readers. The methods of their instruction need not vary materially from those pursued with normal children.

Dismissing, then, this class as out of the question, we turn to the other class, the real deaf mutes, those who acquire language through the eye and who never think of a word as a sound, but ever as a shape, and to whom spoken language is not and never can be a natural language.

If this class of children are limited to speech and lip reading to express their thoughts and receive the thoughts of others, it will be years and years before they will be able to indulge in such conversation as is common among sign-using children in a very few months after they enter school.

This repression of the natural impulse of childhood to tell what it knows and to find out what others know, this holding back the development of the mind till spoken language shall lead the way, is blasting to real mental growth. It may in some cases force the child to bestir himself more toward the mastery of lip reading and speech; but the majority will sit down in despair and wait patiently till their progress in speech gives them a vent for their simpler thoughts.

Other thoughts come to such a child which it would do him

good to express, but he has no way to transmit them to others. A thousand and one problems stand unanswered before him, yet they must remain unanswered much longer than they ought, because, forsooth, he has no langauge to indicate what he wants to know.

I feel sure that oral pupils of this class should be allowed free use of signs outside the schoolroom, and that all chapel lectures should be conducted in the sign language. A little mental development should possibly be sacrificed to further lip reading and speech, but not much. These are valued accomplishments, but after all they are not education, and that is the essential thing.

THE TEACHER AN AWFUL EXAMPLE.

[By J. L. Smith, Minnesota.]

The influence exercised by the teacher upon the mind and character of the deaf child is unique. It has no parallel in the relation between the teacher and the hearing child. The deaf child enters school with its mind and character practically unformed. Home influences count for little in the majority of cases, owing to the lack of a ready means of communication between the child and its home friends. During the years in which the child remains at school those habits of thought and action are formed which determine its character for all time, and it is the teacher that has most to do in the formation of these habits, for it is the teacher that has the closest and most continuous association with the child, and it is the teacher to whom the child looks, more than to anyone else, as a model for its daily conduct. For this reason is the teacher an "awful" example, awful in the sense of the responsibility imposed.

The influence of the teacher upon the child is of two kinds: (1) Sensible influence and (2) latent influence. The former is made evident by those outward and visible characteristics that mark the progress of the pupil from day to day, but the latent influence is far greater, far more lasting. It is the unconscious impress of the teacher's very soul upon the soul of the child. The book lessons imparted to the child by the teacher are largely evanescent, but in regard to character impressions the child nature is "wax to receive and marble to retain."

Man is essentially an imitative animal, waiving the question of his relationship with the quadrumana. This imitative characteristic is most strongly shown in the child. The infant

will imitate gestures and sounds long before it comprehends any meaning in them. We have all of us noticed how quick pupils are to adopt certain traits of their teacher, such as style of handwriting, manner of making signs, gestures, attitudes, etc. These all come under the head of sensible influence. But while this imitative process is going on another and more serious one keeps pace with it. The latent influence of the teacher's moral characteristics is steadily making an impression upon the plastic nature of the child. While we are daily unfolding to the youthful mind the mysteries of readin', 'ritin', and 'rithmetic we are at the same time giving far more lasting lessons by means of the unconscious influence which radiates from us in our manners before the little ones.

The child is an intense materialist. Words and theories have little effect upon his mind and character. It is not so much what is said as the manner in which it is said that impresses the young. The following little poem, taken from an educational journal, well illustrates this point:

NOT THE WORDS, BUT THE TONE.

"Come here!" I sharply said,
  And the baby cowered and wept.
"Come here!" I cooed, and he looked and smiled,
  And straight to my lap he crept.

The words may be mild and fair,
  And the tones may pierce like a dart;
The words may be soft as the summer air,
  And the tones may break the heart.

For words come forth from the mind,
  And grow by study and art;
But the tones leap forth from the inner self,
  And tell what is felt in the heart.

The teacher who is harsh and intemperate in administering correction and reproof will, sooner or later, observe the very same manner among his pupils in their relation to one another, and not infrequently he will experience it himself by way of retort from the pupil reproved.

It is not what the teacher says, but what he is, that molds the character of the pupil. Where one child will be influenced permanently and effectively by precept, ten will be influenced far more effectively by example. Precept without example is little; example without precept is much; precept and example

together are everything. In one of his annual reports, written thirty years ago, in speaking of the importance of securing the services of officers and teachers of the highest ability and character, Dr. Noyes used the following words: "All these pupils are close observers of the spirit and motives of others, and, like little children, they are greatly influenced by them."

No matter how eloquently a teacher discourses upon the importance of industry, application, order, he can not hope to have his pupils act accordingly unless he himself is an example of those very qualities. No matter how impressively he sets forth the beauty and desirability of justice, truth, charity, gentleness, generosity, patience, self-control, he will not see his pupils grow in the grace of those virtues unless he is a daily example of what he preaches. Children are quick to detect inconsistency, though lacking the ability to discriminate between that which is real and apparent. One of my little boys had been sent to bed for getting his feet wet. One day I entered the house with my own feet wet. The little fellow was quick to observe, and exclaimed, "Mamma, send papa to bed; his feet are wet." Æsop's fable of the mother crab and her young one has no more forcible application than in the relation between the teacher and his pupils.

"Said an old crab to a young one, 'Why do you walk so crooked, child? Walk straight!' 'Mother,' said the young crab, 'show me the way, will you? And when I see you taking a straight course, I will try to follow.'"

The most serious question in a school for the deaf, both in the schoolroom and outside, is that of discipline. It means far more than the immediate subjection of the child to certain rules and regulations. It involves the child's character and future. The first essential to good discipline is friendliness between the governor and the governed. He who wishes to rule well must feel a genuine friendship for those he rules, and he must make them feel that he feels it. Children will yield obedience where they love and respect, when they would rebel, lacking those feelings. Fear to pain those we love is a stronger deterrent of disobedience than fear of the severest punishment.

I believe that man is almost wholly the creature of environment. I do not believe in innate depravity. Whatever of inherited tendency there may be, the proper environment during the formative years will counteract it. The child is

like the plant. Given the proper environments of soil, moisture, light, and heat, and the plant thrives and bears blossom and fruit. The steady and gentle influence of the elements produces healthy growth. The tornado or the cloud-burst destroys what the zephyr and shower create. Harsh measures with a child embitter and harden its nature. In no case is the saying that like begets like truer than in the matter of discipline among children. Where there is among the children of a school any considerable feeling of dissatisfaction, a marked lack of respect for those in authority, frequent disobedience to reasonable rules, the fault may invariably be looked for in the manner of those in authority. Whenever there is a widespread feeling of dislike among school children for any particular officer or teacher, the blame rests wholly upon the object of the dislike. Love is the natural feeling in the childish heart. Dislike is unnatural, and it can arise only from an unnatural method of discipline.

What we wish our pupils to be, we must be ourselves. If we wish them to be gentle and courteous, we must be examples of those virtues. If we wish them to become manly and womanly, we must present to them models of manliness and womanliness. "More can be done by amity and forbearance than by embittering and alienating. Man is not bettered by being told that he is bad."

The great principle in discipline is to deal with motives rather than acts. The greater proportion of childish faults are unintentional or accidental. Next in number, come faults due to thoughtlessness or carelessness. Third and last are faults of maliciousness or willfulness. Wise discrimination must be made in the manner of correcting these several faults. Undue severity of discipline for offenses of the first and second classes is subversive of good discipline. The child has a keen sense of justice and injustice. When he did not mean to do a thing, or did it without evil intention, to punish him as if he had offended willfully and maliciously arouses resentment, if not hate, in his heart, and the prime object of discipline—which is character building—is defeated. Teachers can not be too careful of the manner in which they administer discipline. When punishment must be inflicted upon a pupil it should be in direct proportion to the offense, and free from all exhibition of intemperate feeling on the part of the teacher. May not

the following incident have had its parallel in some of our schoolrooms?

TEACHER. Now, Johnny, do you understand thoroughly why I am going to whip you?

JOHNNY. Yes'm. You're in a bad humor this morning, an' you've got to lick someone before you'll feel better.

Let me present to you one familiar illustration of the importance of considering the motives which actuate children. We will suppose a little 3-year old inspired with the idea of picking a "bokay" for mamma. Owing to the childish lack of judgment, the "bokay" in question becomes a collection of unsightly weeds. One mother receives the offering with an impatient "Take away the nasty thing!" oblivious of the blossom of love in the little heart. Another mother, under similar circumstances, receives the gift with a smile and a "thank you, darling!" thus strengthening and encouraging one of the purest impulses of child nature.

Where gentleness and firmness, kindness and justice go hand in hand we may look for the best results, for in no other circumstances is the application of the Scriptural saying more forcible than in the relation between teachers and deaf children: "With what measure ye mete, it shall be measured to you." If we mete love, we shall receive love; if we mete indifference, we shall receive the like; if we mete courtesy, patience, self-control, the like will come back to us, and so on, through all the qualities that go to build up character.

In a recent number of the Outlook Dr. Lyman Abbott says:

I repudiate utterly the barbaric conception of the child as depraved. The child is a beam of sunlight from the Infinite and Eternal; with possibilities both of virtue and of vice, but as yet unstained * * * He may be a Moses or a Pharaoh, a Luther or a Torquemada, a William the Silent or a Duke of Alva, a George Washington or a Benedict Arnold. Every life is a march from innocence through temptation to virtue or to vice. There is no way in which virtue can be won save by battle; there is no way in which battle can be fought without possibility of defeat. And so in this child there is neither virtue nor vice. No courage yet, nor truth, nor purity, nor love, nor faith, but the possibility of all.

And therefore there is in this child, for the father, mother, brother, sister, friend, a great opportunity. * * * To have a little life put into your hands, to be with that little life by day and by night, to shape it, not so much by what you consciously say, as by what you *are* unconsciously in all your influence, example, and life. What an opportunity is this!

GEOGRAPHY, AS TAUGHT IN THE HORACE MANN SCHOOL.

[By Elsa L. Hobart, Boston.]

The work in the Horace Mann School, in both primary and grammar grades, is departmental. I teach both the preparatory work leading up to geography, which is done in the primary department, and also the geography in all the grammar grades. As our school is a public day school, our graduates receive the same diploma as that awarded to hundreds of other grammar-school graduates throughout the city; hence the requirements in geography are the same as those of these other schools.

We call the preparatory work of the primary grades observation lessons, and begin them with the little ones who have been taught only oral and written words and simple sentences. During the first two years of observation work the lessons consist of studies of plant and animal life. First, those seen around us are taken up; the golden-rod, for instance, which shows root, stem, leaf, and flower in September, when school opens; the cat, dog, bird, horse, cow, pig, mouse, and fish, which the pupils can observe for themselves. Their homes, their habits, and their food are talked over very freely by the children, and each child is encouraged to tell some simple facts that he himself has observed, the teacher often writing upon the blackboard the spoken sentences volunteered by individual pupils. In the second year plants are studied as to the use of their parts as food, still using chiefly those familiar to the pupils. We talk of fruits—apples, pears, peaches, oranges, lemons, and bananas; of vegetables—potatoes, onions, cabbage, etc.; also of celery, rhubarb, and lettuce. Animals of the same families, but not as familiar to the children as those already studied, are taught. The pupils learn that the tiger and the lion are like the cat in some things, while differing in others; that the fox and wolf are in many ways like the dog, etc. They also learn the names and distinguishing features of different birds and fish. Pictures are used in this animal work, and simple stories and descriptions in print are found and given to the pupils to read. Trees, shrubs, and herbs are talked about during the latter part of this year, and the children name plants familiar to them and decide in which class each one belongs. When the spring flowers come they are brought in and their names

taught. Toward the end of the year the class learns the directions—north, south, east, and west. They get some idea of distance, and have lessons upon sunrise and sunset. They also learn something of the comparative size of cities, towns, and villages, and they name towns and cities known to them.

The following year the class first gets a clear idea of the physical features of the earth in our immediate vicinity. We climb a hill and then describe the way we went, the climb, and what we saw. The members of the class draw a plan of the streets upon our route and pictures, however crude, of what we saw. In this way the class takes up hill, field, meadow, pond, river, ocean, beach or shore, bay, harbor, peninsula, cape, and island, these being available in our immediate vicinity. The rest of the year is spent in lessons upon the cold country and the warm country to the north and to the south of Boston, respectively, and the people, animals, and plants that live in these two widely differing places; in a study of our food and clothing and how it is obtained from plant or animal, and in what kind of a country that plant or animal is found. We take up in this way sugar, tropical fruits, coffee, tea, flour, cotton, flax, hemp; also, meat, milk, butter and cheese, leather, silk, and wool.

In the following grade, the last in the primary department, the pupils, reviewing hill, field, meadow, pond, river, ocean, shore and its forms, are taught mountains, plains, deserts, plateaus, brooks, lakes, springs, and coast. Pictures and descriptions enable them to imagine these new forms readily, as they are aided by their familiarity with the natural features around them. They are led to wonder how so many different natural features have come to be—whether they always remain the same or whether they change. Their attention is then called to the crumbling bits upon the side of a ledge of rocks, and they are encouraged to suggest causes for what they see, and results, should the process continue. They are then helped to understand the weathering of the land surface and its disintegration, and the story of the glacier is told to them in as simple a way as it can be told; it is a necessity, of course, if one would account for the present surface of New England. The form of our coast line is also made to suggest questions as to its origin, and the pupils are led to see that it has sunk and to familiarize themselves with the idea of the uplifting and subsiding of the crust of the earth. Toward the end of

this year they are taught about the size, form, and motions of the earth in the simplest possible way; they are then shown its representation upon globes and maps, and are taught to read these globes and maps.

In the grammar department the pupils begin the study of geography under that name. The five geography lessons given to the lowest class in this department each week are divided in this way: Three are given to descriptive geography of the different countries of North America and the most important countries of Europe, considering the topics of climate, animals, vegetation, minerals, inhabitants, occupations, ruler, and principal cities. One lesson a week is given to physiography, studying the ocean, its basin, its water, its waves, etc., and also the formation of low land and high land. The fifth lesson is a summary of the physiography, given sometimes as dictation and sometimes as a lesson for written reproduction.

In the next year North America (including a special study of the United States and of New England) and South America are studied by topics, and in the following year Europe, Asia, Africa, and Australia are treated in the same way. During these two years the physiography (rivers and their work) is taken up in the dictation lessons.

Throughout the whole of the preparatory work and during these first three years in the grammar department the same general plan is used in conducting the lessons. First we have a general oral talk upon the subject in hand, whether it be plant, animal, natural feature, country, or special topic in the consideration of a country, perhaps illustrated by object or picture as the talk proceeds; next, a careful study of the thing itself by the pupils, or, if that is not possible, of an illustration of it; then an oral description by the teacher, either reproduced in speech or in writing by the pupils, or oral or written questions answered by them; lastly, a printed summary prepared by the teacher and given to each pupil. Each class reads several books during the year in connection with the subjects it is studying. These books are carefully selected, and are of great importance in broadening the pupil's conceptions and helping to form a reading habit.

In the four higher classes of the grammar department textbooks are used. The sixth grade uses Niles's Elementary Geography, selected for its special attention to descriptions

of places. The plan of recitation is to have one pupil read aloud a paragraph to the class; it is then discussed and explained by teacher and pupils; the next pupil reads the following paragraph, and so on. When a chapter has been thus discussed, it is reviewed as a home lesson, and written questions upon it are then answered in writing by the pupils without reference to their geography. This book is completed during the year, with the exception of the first part, treating of mathematical, physical, and political geography, which is omitted. In the seventh grade this is taken up topically, the information upon each topic being gained, first by its discussion in the class by teacher and pupils and then by the pupils reading about it in Niles's and also in Warren's Common School Geography, which is selected because it is used in the other grammar schools of Boston. Some of the topics are the form of the earth, the motions of the earth, latitude and longitude, the atmosphere, government, etc. Each pupil finally writes out what he has learned about the topic; this is corrected by the teacher and then learned and written out again by the pupil. The eighth grade and the ninth, or highest grammar grade, go on from this point and complete the study of Warren's Common School Geography much in the same way as the sixth grade treated Niles's. In the ninth grade, the later part of the year is spent in a study of physical geography. This should present chiefly a summary of familiar facts when the present primary classes reach the ninth grade. For when the physiographical aspects are touched upon early in the child's life, it becomes natural for him to find out, whenever possible, the causes of what he sees and its probable results. In addition to the training and knowledge that this habit gives him, it makes him much better able to come to just conclusions in regard to phenomena observed for the first time.

All the recitations are conducted in the same manner that the teacher would work in a school for hearing pupils, only it becomes necessary for each pupil to give his undivided attention to the pupil or teacher who is speaking, in order to read the lips, or to the blackboard if it is a written exercise. Independent written answers to test questions are frequently required, that the teacher may know how far each pupil has made himself master of the subject.

THE CORRELATION OF GEOGRAPHY AND HISTORY.

[By J. F. Bledsoe, Alabama.]

Correlation is a principle founded in nature. God in his wisdom created the universe so that the various departments are interdependent. We find this true with reference to the animal and vegetable kingdoms. All animal life is dependent on vegetable growth for sustenance, and, in turn, that which is thrown off by animals as waste matter furnishes nourishment to the vegetable world. This is only one of the many instances in nature of the principle of correlation, and is no less true when it comes to the study of the various subjects the mastery of which make up an education. It is strikingly true with reference to the study of history and geography. The one is a study of the doings of people while the other tells where and under what conditions these various actions were performed. One answers the questions, When? What? and By whom? The other tells where and under what natural influences they were accomplished. The latter is possible only when the events of the former have transpired. To the people of the Old World the western seas terminated in a chasm of darkness; hence to them there was no geography of the New World until the daring exploits of Columbus and other explorers had written the initials of its history.

My purpose in this paper, therefore, is to insist on the importance of geography and history being taught together. Many of us are clamoring for natural methods; let us then teach the various subjects in their natural relationship. This is absolutely necessary if we would arouse the highest interest and thus enlist the best efforts of our pupils. The idea of the close relationship between the two subjects is recognized to a certain extent, yet they are too often treated as distant cousins instead of twin sisters. Too many lessons in geography as well as history are conducted on the text-book plan, and lessons in text-books are inadequate if taken "dry so." How many of us have pored over lessons in geography, looking up capes, tracing rivers, locating this, that, and the other on the map, which more often than otherwise were never seen or met with elsewhere? How many of our lessons in history were anything else than pages upon pages of dry matter, which had to be memorized and recited verbatim et literatim, which were retained no longer than was required for recitation?

I would not be understood as disparaging the idea of memory drill in our work. A certain amount of this is absolutely necessary, but I do insist that it should be made up of that which is practical. The lessons should be carefully prepared by the teacher, eliminating all surplus matter, giving emphasis to the more important features. In these lessons we can not afford to enter too much into detail. I can not better illustrate what I mean in contending that the best results can be obtained from thus teaching history and geography together than by giving you a little personal experience with my class in these studies. My lessons in geography were somewhat similar to those which were outlined by Superintendent Clarke in the Annals sometime ago, except that I followed each lesson in geography with a lesson in history. I began with a map of the schoolroom and then of the building. Following this was a short historical sketch of the building, when and by whom it was built, and for what purpose. My next lesson in geography embraced other buildings, and finally the institution grounds, and following this another history lesson. Our lessons extended outward from the school to the town, each lesson in geography being followed by a lesson in history. When we came to the various streets the interest became very great, as we traced from their names back to some prominent settler or historical event whence the names were derived. The history lesson on "Battle" street was particularly interesting, since it traverses the field where the battle of Talladega was fought between General Jackson and the Indians. In giving these lessons I found it to be the best plan for the teacher to develop them in the presence of the class by means of questions, suggestions, etc. Lessons thus developed were always best understood and remembered. Maps of the buildings, grounds, and town were developed in the same way, the teacher leading and doing just enough to make them accurate. After finishing the lessons on the institution grounds and the town I paid less attention to detail, giving lessons on the various towns and counties from which the several members of the class came, and closed the series with a number of lessons embracing the whole State, dwelling on the topography of the country, the climate, the seasons, vegetable and mineral resources, and the occupations of the people. The principal cities and towns were located and a short historical sketch of each was given. Special attention was given to the location of the various railway lines and their connections.

We next took up the period of discovery and the geography of Europe and North America. Our work on Europe at this time was merely enough to locate the places whence came the discoverers and settlers. We dwelt somewhat on the history of the races, their peculiarities and characteristics.

The routes of the discoverers were traced with colored crayon on charts, as was suggested by Miss Wood in the Educator some time since, the colors representing the different nations. This idea was carried out on the maps of the settlements, and was made use of as we followed the expansion and development of the colonies into a nation. We studied the colonies not in their chronological order of settlement but in the order of their importance in the formation of the nation. History was thus traced from the period of discovery through the Revolutionary era. Preceding each of these history lessons was a lesson in geography, making the class perfectly familiar with the location of the various places where the most important historical events transpired. In connection with these lessons in history I used outlines suggested by Chambers's Elementary History. An outline was given at the end of each lesson by which it was sought to emphasize the more important events in the lesson and their dates. The outline of each succeeding lesson was made to embrace not all the items of the former outlines, but those deemed most essential, so that the outline of each lesson was, to a certain extent, a review of all preceding ones.

Outline No. 1.

THE VOYAGES OF COLUMBUS.

- Discoveries
  - Where
    - First voyage.
      - San Salvador.
      - Cuba.
      - Haiti.
    - Second voyage—Jamaica.
    - Third voyage—South America.
    - Fourth voyage—Isthmus of Darien.
  - When
    - First voyage—1492.
    - Second voyage—1493.
    - Third voyage—1498.
    - Fourth voyage—1502.

Outline No. 2.

- The three great discoverers.
  - Columbus
    - 1492
      - San Salvador.
      - Cuba.
      - Haiti.
    - 1493—Jamaica.
    - 1498—South America.
    - 1502—Isthmus of Darien.
  - John Cabot
    - 1497—Labrador.
  - Sebastian Cabot
    - 1498—East coast of North America.

Results after pursuing the study of geography and history together have proven much more satisfactory than when the subjects were taught separately.

DISCUSSION.

Mr. F. D. CLARKE. I should like to say a word or two to express my very great appreciation of the paper by Mr. Bledsoe, which has just been read.

Of course, we put our own values on what we get here, but to me it is the most valuable suggestion that I have received from all the papers that I have heard. The idea of beginning to build history right at the school building itself, I confess, is a new one to me.

I am sure that it is the right thing in teaching history, and I thank the young man very much for his paper.

Dr. Gallaudet moved to refer the papers still unread to the executive committee for their decision as to the advisability of printing them. The motion was seconded and carried, and the section adjourned.

Dr. Gallaudet took the chair.

The following resolutions and report were offered and adopted:

Resolved, That the Convention of American Instructors of the Deaf tender a vote of thanks to his excellency Asa S. Bushnell, governor; to the Hon. Asa W. Jones, lieutenant-governor; to the honorable board of trustees, and to Supt. J. W. Jones and his excellent wife, officers, and teachers of the Ohio Institution for the Education of the Deaf, for their gracious hospitality and cordial entertainment daily accorded to the members of this convention.

Submitted by E. McK. Goodwin.

To the Convention of Teachers of the Deaf:

The students of Gallaudet College, feeling that the memory of our honored benefactor, the pioneer in the education of our class, the Rev. Thomas Hopkins Gallaudet, calls for universal honor and gratitude from us, think it but fitting that one day in the year—his natal day, December the 10th—should be as generally as possible set apart as a holiday by our class, the deaf. And in the hope of attaining this object we hereby respectfully petition the Convention of teachers of the deaf to consider the matter, and to use its influence to secure, if possible, the observance of December the 10th as a holiday by all the schools for the deaf in our country.

ARLINGTON J. EICKHOFF,	ROBERT L. ERD,
GEORGE E. FISHER,	MAY E. STEMPLE,
PETER N. PETERSON,	HELENA ROSE LEYDER,
B. FRANKLIN JACKSON,	LILLA E. MCGOWAN,
ROBERT ZAHN,	SADIE M. YOUNG,
WALDO H. ROTHERT,	CLARA RUNCK,

Members of the Class of 1898, together with 66 other Students of the College.

Mr. LARS M. LARSON. Mr. President, it has become the duty of the committee on necrology to present the following partial report. In this list we have the names of three principals and twenty-three teachers who have departed this life since the last convention. Short accounts of their lives and work have been, or will be, prepared by those who knew them well, and should be properly recorded in the report of this convention for the benefit of those who will come after us and may desire to know the history of all who have labored nobly and faithfully in this profession. The written accounts will be printed as an appendix to the proceedings of this convention. The names are as follows:

Principals.—J. L. Carter, H. N. Felkel, and Paul Binner.

Teachers.—Thomas Burnside, L. W. Saunders, H. M. De Long, Mary H. Fisk, Edith Rambo, Kate Gaylor, Amy Stone, Belle Schrekema, L. Hildebrand, O. D. Cooke, W. G. Jenkins, R. H. Lamb, I. H. Yeager, Louise C. Irby, Eliza V. Beers, Lucy B. McMaster, Elizabeth Knight, Elizabeth Fuller, Anna Ford, W. B. Hill, Mary E. Totten, and Clara E. Parker.

Also an account of the Hon. Gardiner G. Hubbard.

Whereas there seems to be in many States great confusion in the public mind as to the status of schools for the deaf and the blind: Therefore,

Resolved, That the members of the Convention of American Instructors of the Deaf desire to put upon record their earnest hope that in all future State legislation schools for the deaf and the blind may be classified with the educational forces of the State, and that their misleading association with the penal, reformatory, and charitable institutions of the various Commonwealths may give way to such enlightened public opinion as will demand that the instruction of the deaf and the blind shall form part of the school system of the State.

Presented by Mr. F. W. Booth.

Dr. WILKINSON. The thought underlying this resolution involves a crusade very much like the crusade in the mediæval times against the Turk, except that this is a crusade against prejudice, which we may find hard to overcome. It has been the effort of my life, for a number of years at least, to overcome as far as possible this prejudice. I suppose, like the crusade that I referred to, we are stimulated to a greater fervor by the wrongs that we see committed in this matter.

This great wrong has grown out of the charitable idea that has attached itself to us—the idea of the asylum. It was so named in foreign lands, and it was continued in this country by the unfortunate use of the word asylum. It spread from State to State, until the general impression among the public

is that an institution for the deaf or the blind is an asylum. I suppose you are frequently asked how the inmates of your asylums are doing. This resolution is against that idea.

It aims to correct public sentiment. It can not be accomplished in a day. It will require the united effort of every member and every teacher throughout the land. Every man and woman engaged in this honorable work should resolve himself into a special committee and frown down at all times the idea of an asylum connected with our work. The teachers in a State are a force in that State, and the politicians dare not attack that force. As far as you can work, you should work to prevent the reduction of your salaries to a point equal to the wages of the common laborer. But the difficulty is, How can this be done?

In the first place, you should work with your superintendent of public instruction. You should let him understand that you come under his department and endeavor to interest him in your work. Have him visit your schools. Induce him, in making his reports, to refer to your institution. In all respects induce him to consider it as one of his departments. He will feel that his department of work is enlarged by embracing these institutions for the deaf and the blind. Interest the parents of your pupils in this matter. They are vitally interested in the education of these children. This stigma should not be attached to these institutions. It is the right of every child in the State to be educated, even though it may involve additional expense. He is not deprived of this right because he is deaf or blind. I think I am correct in saying that this opinion has been expressed by the court in Kansas. The question came up as to the necessity of the institution keeping the children during the vacation. There has also been much discussion of this question in the State of New York.

I think the children of these institutions should be taught, not as paupers, but with the same privileges that all children are entitled to. The tendency in all States is to classify these institutions in such a way as to bring them under the board of State charities and reforms. I think you should endeavor, as far as possible, to get our institutions eliminated from such control. I have had some experience in my own State. There was a law introduced to place all public institutions under a board of control. I said, pass any law which you may choose that gives a proper classification to us, the same as the public

schools and the high school, and you will never find me fighting it. But I do fight for the proper classification of our school.

We are opposed to having this stigma attached to the children, who do not deserve such treatment. Do not put this stigma on the pupils in an institution for the deaf and the blind. I came here intending to organize a sort of crusade and go home to fight this thing through as hard as I could, and if we do this it will result in the elevation of our profession and the elevation of the pupils with whom we work.

Dr. GORDON. I dislike to take the time of the convention, but I want to say that, so far as our institution is concerned, we are on intimate relations with the State board of charities.

The fact that we report to the State board has no effect upon the welfare of the institution. So far as the institution is concerned, we are in intimate relation with the educational organizations of the State. We report to the commissioner of education for the State of Illinois. It is necessary that the institution should come to the people through representation. There can not be a county institute held within the reach of us that we can not and do not attend. It is proper that we do so, for we are teachers. In the district meeting of educators it is proper for our teachers to take a part in the programme. We not only take a part in the programme, but take part in the discussion.

When our Central Illinois Association of Teachers, which numbers about twelve hundred, meet, we attend that meeting and sometimes take part in the programme. When our State Association is held it is entirely proper for the superintendent of the institution and the teachers to attend and be recognized and take a part in the proceedings, which we do.

We are regarded as an educational institution. We have no embarrassment from that source. We have a volunteer organization for benevolent work, and any person can join it. We let them know in this organization that we are trying to conduct an educational institution for the deaf. We think that everyone all over that State knows that we have at Jacksonville an educational institution for the deaf.

Classifications will not do; you must do something more. You must let people know in regard to this matter.

Dr. GALLAUDET. I have listened very closely to the remarks of Dr. Gordon. I hope he does not mean to make all depend upon the State board of charities.

I hope he does not mean to make it an example. Such a relation may exist in Illinois, and it may be better that it continue than to have it broken. I do feel that where no such relation exists it is not desirable to bring it about. It is not necessary for the universities, seminaries, colleges, high schools, and primary schools to be associated in any way with the State board of charities to secure the liberal support of the public. I feel that too great care can not be taken at every point to hold the schools for the deaf and the blind to the right place as a part of the great free educational system. They should form no alliance so that any suggestions may be cast that we are in any way a charitable sort of institution. I indorse the remarks of Dr. Wilkinson. In Washington last year there was a report on the benevolent institutions of the District, and the Commissioners before sending it to the House of Representatives did us the justice to say that they did not put in the college for the deaf because it was regarded as a charitable institution, for it was regarded as a purely educational institution.

Dr. GORDON. Perhaps a little explanation on my part is necessary. I am in harmony with the spirit of the resolutions, but our relation in Illinois has been agreeable and harmonious, and I did not feel quite free to vote for the resolution, which might upset an arrangement that is now agreeable and satisfactory to us.

Mr. F. D. CLARKE. I do not suppose that in the whole country there is a State board of corrections whose visits to institutions are more pleasant and helpful than the one presided over by Bishop Gillespie. They come to us, and we feel that they are our friends. His presence is a benediction to us and to our institutions; but I agree with the spirit of this resolution.

Rev. Mr. EAGLESON. I want to say that I think the friends of the deaf were to blame for this unfortunate view that has been taken of the institutions for the deaf. They call their schools "asylums," and it is very hard to get it out of the minds of the public. I found this unfortunate opinion prevailed in the minds of the people, that it was a sort of an asylum.

I think the reason is this: The idea is that children are taken and do not pay for what they get, and therefore they are stigmatized as charity students. I think this idea is a wrong one. Where is there a child in the school that pays for what he gets? We have a thousand students in the State university, and the most they pay is $15 per term for contingent expenses. Are not they almost charity pupils? Need

they boast over these deaf and dumb pupils? Now, it lies with you, the friends of this institution, to put the deaf, and the blind, and the imbecile on a proper basis, and to see that the schools be recognized as a part of the great school system of Ohio. Ohio has determined to educate all classes of her children, and it is as much her duty to educate these children as it is to educate her hearing children.

Mr. DOWNING. I want to say a word in regard to this matter. As you know, I was associated with the work here. During the year that the G. A. R. encampment was held here I was in this institution. There were a great many people who went through the school that week. They were from many different States, and I took great crowds through here. Invariably they would turn and ask me if they could see the patients. I was disgusted and said, "Do you think we keep people under lock and key? When June comes we send the children home, and they come back in September, as other children do."

Mr. MOSES. I want to say in regard to this matter that I think it has come about from the educators who first gave these names. I believe these first names were meant to be a good explanation. If you look in your dictionaries, you will find that they make the proper explanation.

You will find that they will tell you that an asylum is a place for the education of the deaf and blind.

The resolution was adopted.

The following resolution, offered by Mr. J. C. Balis, was presented and adopted:

Whereas the important and onerous part of interpreter has been so amiably and acceptably filled by the ladies and gentlemen called upon to officiate in that capacity as to merit and command some expression of appreciation: Therefore be it

Resolved, That the hearty thanks of this convention be extended them for their valuable services.

Mr. FRANK READ, Jr. I want to offer a resolution as to fixing the time for the next convention. Some of them think the time is too late. I think the time is a little unfortunate. While it has been a great pleasure to be here, it has spoiled the plans of some of us for the vacation.

Resolved, That it is the sense of this convention that the next meeting of the convention be held at as early a day in the summer vacation as convenient.

Mr. CONNOR. If we are to meet in an institution, we must accommodate ourselves to the conditions which exist in that

institution. Since the length of the school year is different in different States, we must govern ourselves according to the conditions of the schools in the State in which it is held.

The resolution was not adopted.

Mr. T. P. Clarke, of Michigan, offered the following resolution:

Resolved, That the hearty thanks of this convention be, and the same are hereby, tendered to the reporters of the daily papers for the courtesy they have manifested toward the convention and the full and accurate accounts of the proceedings which have been published.

The resolution was adopted.

Mr. ADDISON. Mr. President, Ladies and Gentlemen, I beg the indulgence of the meeting to express, on behalf of the delegates from Great Britain, a very cordial feeling of thankfulness for the courtesy and kindness received since our arrival on these shores. We feel that it is impossible to express what is in our hearts. I wish to say that we shall carry home with us a warm sense of your great kindness in receiving and treating us. Speaking for myself, I have learned a great deal since coming to this meeting. I shall take these hints and act upon them.

I shall always remember these friends I have made. I wish also to say if any of you come across the water and wish any information I shall be ready to give it. My feelings are too deep to give full expression to them.

I thank you from the bottom of my heart for the greeting you have given us who are from the mother country.

FINAL WORDS OF SUPERINTENDENT JONES.

Members of the Convention, Ladies and Gentlemen: I think I can not let this convention adjourn without acknowledging thanks, on behalf of the governor and board of trustees of this institution, for the resolution you have just passed. I feel that the thanks are not due from you but from us. We are the beneficiaries of this meeting.

As we said at the opening, great good will come to this institution from this meeting. We feel certain that we made no mistake when we extended to you the invitation.

We feel that we owe to you the thanks, rather than that you owe them to us. The institution has felt highly honored by your visit. We have done all we could to make it pleasant for you, but you have done more by making yourselves at home. This made our entertainment easy to perform.

I did not want this convention to adjourn without the privilege of saying that I feel deeply the kindness and courtesy extended to me by the profession from first meeting with you at Philadelphia two years ago, and at Milwaukee last year, and again at Washington City two weeks ago. I have been greatly benefited by these associations.

I feel that I am one of the profession now, and as long as I remain in the work I hope to have your strong right arm, and I assure you that you shall always have my best efforts in this work.

FINAL REMARKS OF DR. GALLAUDET.

Ladies and Gentlemen, Brethren and Sisters, Members of the Convention: The hour when we must adjourn this convention is near at hand, and I desire to speak briefly. I am sure that you have heard my voice so often during this convention, I have called you to order so many times, that it is not necessary for me to make a speech at this time. I can recall an old saying—I am not sure that it is in the Bible, but it is a truthful one, nevertheless—that "Of the reading of many papers there is no end, and much discussion is weariness to the flesh." I am sure that you will be sorry when this convention comes to an end, but we have a feeling that we have had about as much convention at this time as we can stand.

I had a leave of absence this afternoon for a short time, and as I walked about the institution and observed the expression on the faces of those with whom I met and talked, it seemed to speak but one thing. It seemed to say we have had about enough of convention for one time. I am sure that we are ready to adjourn, but I am equally sure that we have feelings of thankfulness and joy that we have attended this convention. The weariness will pass away in due course of time, and the heat will oppress us no longer, but the memories of this convention and its work will be carried with us throughout our lives, and these memories will often speak to us of these days spent in the good city of Columbus and in the noble institution that is located here. I can not help congratulating you, my fellow laborers in this convention, that we have had such a successful meeting, and that we have such delightful memories to add to those of the past. I am sure that we are very thankful to our kind friend, Mr. Jones, who has welcomed us to this institution and provided for us during

our stay here. Our thanks have already been expressed to our host, and we go away with the feeling that we have been entirely at home during our stay with him. I congratulate you on the earnest work and good feeling that has prevailed throughout the sessions of this convention.

I feel that I can not close this convention without saying a word to our friends from across the water. We appreciate the efforts and the sacrifice which they have made to attend the meeting of this association. I am sure that I express the sentiments of the convention when I say that it has been a great pleasure to us to have them with us. We hope that they have enjoyed the meeting and that they will speak so well of us when they return to their land that when our next meeting is held they will come again and bring many of their friends with them. Our association is broad enough and liberal enough to embrace all, and it may grow, perhaps, until in the course of time it shall be known as the World's Association of Instructors for the Deaf, instead of the American Association, and if so, we shall be glad to give due credit to our British friends for inspiring the thought and action which brought it about.

And now, in conclusion, I think it is fitting that we should close this convention by joining together in singing our national hymn, "America." You know that Americans are always patriotic and that we all love our country. We Americans love to sing "My country, 'tis of thee," as you, my foreign friends, love to sing your national hymn. You will remember also that the tune to both of these national hymns is the same; so while we sing "America" you can chant "God Save Our Queen," and we will reecho in our hearts "God bless Queen Victoria."

The convention rose and joined in singing the first and last verses of "America," after which it stood adjourned.

QUESTION BOX.

QUESTION BOX.

LANGUAGE.

No. 1.—What is the best way of correcting the language of our pupils?

In that good old English classic, Mother Goose's Melodies, there is a riddle in rhyme, the last line of which reads:

The longer she stands, the shorter she grows.

The idea embodied in that line very well expresses my feelings as a teacher. It seems to me that the longer I teach the less I know. When I first began the work all seemed simple and easy. I wondered why it was that so many veterans of the profession were worried and perplexed about certain questions and were unable to settle them satisfactorily. But now I am worried and perplexed myself, and the very question that I am asked to answer disturbs me more than any other.

As to the best method, I will leave that for someone with far more experience and a degree more of assurance to determine. The most that I can do is to speak of a method.

In correcting language the teacher should classify all errors under two heads: (1) Errors due to carelessness or thoughtlessness; (2) Errors due to ignorance. These two classes must be treated differently. Errors due to carelessness should always be corrected by the pupils themselves. One good way of doing this, not original with me, is to make a list of common errors on a wall chart and number them, thus:

1. Misuse of the articles. 2. Punctuation. 3. Capitalization. 4. Number. 5. Tense. 6. Spelling, etc.

When the teacher is correcting a written exercise the number corresponding to the error may be written on the margin of the paper or slate opposite the line containing the error, and the pupils, by referring to the chart, ought to be able to correct all such errors. In the case of more advanced pupils the teacher may think this method too helpful to the pupil. If so,

instead of numbering the errors, simply make an X mark on the margin, and let the pupils determine what the error is.

Errors due to ignorance must receive different treatment. The most effective way I have found is to keep my eye open for characteristic errors in the written exercises of the pupils, make a note of them, and bring up the correct forms in various ways for review. When the written exercises are of a general nature—a class exercise—after all have been corrected I usually go over them with the whole class, taking especial pains to illustrate the use of certain expressions which some of the pupils have used wrongly. These expressions are reviewed as a special exercise the following day, and from time to time thereafter until the pupils have fairly mastered them.

As a rule, I prefer to have nearly all the language work of my class written on paper. When the exercise is of a general nature I correct the papers alone and then review them before the class, as above stated.

Corrections made without subsequent review are almost valueless. But when the pupil knows that the faults corrected and explained in one exercise will appear later in another exercise, in corrected form, more attention will be paid to the corrections. Individual corrections are the least profitable, as many mistakes are common to several pupils, and individual correction involves a repetition of the same explanation in the case of each pupil. Class correction saves time and energy.

To recapitulate briefly, errors due to carelessness should always be corrected by the pupils themselves. Errors due to ignorance should be carefully recorded by the teacher when they first appear, and then be followed up by frequent and persistent review until they are cornered and annihilated.—*J. L. Smith, Minnesota.*

No. 2.—Is it advisable occasionally to conduct recitations by finger spelling in second and third year classes?

It is not only advisable that the teacher occasionally conduct a recitation in finger spelling, but in my opinion incumbent upon him to employ the manual alphabet whenever the occasion permits. The only exception I would make to this rule is in the case of oral pupils who are so adept in lip reading that for all practical purposes they need not resort to any other method of communication. Our pupils have sufficient practice and to spare in chirography, but they do not have

enough in dactylology. In consequence it is a common thing to find pupils in intermediate and even advanced classes whose control of their digital muscles is so inadequate that they hesitate and blunder in attempting to spell the simplest sentence, some being able to write it more rapidly than to spell it. More numerous still are those who read spelling so indifferently that often a sentence which they would readily understand on paper conveys no idea to them when spelled on the fingers. This is a weakness by no means confined to the deaf. Many of us teachers are deficient here, but the deaf should especially have a ready command of dactylology, both subjective and objective. It should be their principal mode of communication while at school. If the teacher required its use more extensively in the schoolroom, the pupil would use it more on the playground and in all social intercourse. This preference for signs is perhaps not so much due to their convenience per se as to the fact that he lacks a ready command of dactylology. Now, do not go off at a tangent, friends, and declare that Blattner is opposed to the gesture language. It has its uses, but should be confined to these as nearly as practicable. A general and persistent use of the manual alphabet will add a class of clear-cut concepts, and hence greatly increase the power of coordination; a readier and better command of English will follow, and that is what we all desire.

Much may be said in favor of employing the manual alphabet in recitations. True, its use for this purpose is, perhaps, on the whole not as conducive of accuracy as writing, but this is more than made up by a saving of time—a very important consideration in our work—the enlivening of an exercise by a rapid fire of questions and answers, and the sharpening of the pupils' wits by the frequent opportunities for digression into discussions. Besides, spelling exercises compel rapid thinking—knowledge that is not ready at our beck and call is not worth much—and they serve as, perhaps, the best test of what the pupil really knows. In writing he has too much opportunity to borrow from books and his neighbor what he does not know himself—to dress up in some one else's clothes, so to speak. I would conduct recitations by finger spelling in the above grades and in all grades; not always, but frequently. The earlier pupils are habituated to the use of the manual alphabet the better, because the more fully will the English language become a part of their mental life.—*J. W. Blattner, Austin, Tex.*

No. 3.—Would it not be well to teach the most advanced pupils the more common forms of dialect?

This is not a question to be answered categorically, although my answer would be in the negative for the majority of cases. It would be well to have our older pupils understand that there is such a thing, but I see no especial reason for teaching it. There is more good literature in pure English than any of us or our pupils ever can hope to read. Newspaper dialect is not worth considering, as it consists of inane jokes and equally inane "aphorisms." It can not be argued that a knowledge of dialect would enable the deaf to more readily understand half-educated friends who may write to them, as such friends would never write anything that even approximated dialect in its printed form.

Dialect in print is usually the phonetic spelling of mispronounced English words, and is so ungrammatical and idiomatic as to be almost unintelligible. Our facility in reading it results from our ability to interpret the printed page to our mind by aural impressions. That is, as we read the mind receives an impression of what the word would sound like, and its resemblance to the proper form makes it recognizable. This faculty of translation is wanting in the deaf, except in those who have lost their hearing at a comparatively advanced age. Our ability to gather the sense from peculiarly constructed sentences, or sentences parts of which we would not understand if we took them literally, is also of great help to us. This ability is the result of perfect familiarity with language and a well-developed reasoning faculty, neither of which is to be found in our pupils as an ordinary thing. Thus it will be seen that to teach dialect would present almost as great difficulty as to teach another language, and what would be gained would not be worth the time expended.—*Edward J. Hecker, Indiana.*

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No. 4.—In giving a story for reproduction should the entire story be given at one time or in parts?

Stories should be selected with the view of giving the entire story at once, though cases may arise where fine stories for reproduction may be too long for one exercise. In that case, of course, the stories may be given in sections. That part of the story, however, that is to be written in any one sitting should be given at one time without break.—*D. C. Dudley, Colorado.*

No. 5.—What is your method of teaching questions?

I teach questions through constant practice in using questions, or, more specifically, by making questions useful for their primary and their principal purpose. Questions divide themselves according to their purpose into two classes, namely, questions used to gain information and questions used to test knowledge. A method of teaching questions to be worthy the name must recognize these two classes as distinct, and it must, moreover, determine which class is primary and principal and therefore to be first used and taught. The essential difference between the two classes of questions is the difference in the states or moods of mind from which questions proceed. Questions seeking information proceed from ignorance, from a mind relative to the knowledge desired, in a state of emptiness; questions testing knowledge, on the other hand, proceed from knowledge or from a mind already in possession of the particular knowledge asked for. This is a difference as marked as it is vital, for it gives to every question double meaning, one or the other of two interpretations according to the purpose of its asking. Questions seeking information are the expression invariably of the "I-do-not-know-I-want-to-know" thought, while questions that test knowledge express the "I-know-I-want-to-see-if-you-know" thought. Questions that proceed from ignorance and seek information are the natural questions of childhood, and they constitute the great majority of the questions of everyday business and social life. Questions that proceed from knowledge and that are used to test knowledge are peculiarly the questions of the schools, and they are therefore limited in their field of utility almost entirely to the school period of life. It is safe to say that most of the difficulties attending the teaching of questions to deaf children arise from indiscriminate question asking, from failure to note and observe the two distinct utilities which questions serve, but more than all else from a preponderating use of test or school questions in beginning classes, where the questions are asked in many cases with no purpose other than to see if the pupils understand questions and have ability to answer—the basest use, perhaps, to which this noblest and most useful language instrument may be put. Asked my method of teaching questions, I may say it consists almost entirely in the avoidance in the beginning stages of the use of school questions, or questions asked for the purpose of testing the knowledge or the understanding of pupils, and in the limitation of

myself and my pupils to the use of natural questions, or questions seeking real information. It is a simple method because it follows a simple rule: Do not ask a question the answer to which is known. I ask questions because I wish to know something that I do not know; the pupils ask questions for the same reason—they wish to know something that they do not know. Questions asked bring answers, and answers are always information. Thus questions become from the beginning an instrument for service and prove their purpose as an adequate means to a very useful end. It is an easy art to utilize conditions, or to create conditions, to arouse question thoughts, and thus to make occasion for question expression. But the child mind is naturally full of question thoughts, so there can scarcely be a lack of material for use in teaching forms or sentences for language. When a lack occurs, or when it is desired to make an exercise general, a meager statement of a very interesting fact will serve to start questions of a most searching nature. This may be varied by bringing into the room some article concealed by the clothing or by wrappings, with the same result. The familiar game of twenty question again will serve its purpose of giving large and varied practice in natural question asking. Test questions will be used, all in due time; there is no danger that they will not be introduced soon enough, and they will come just as soon as the natural question has developed itself in its character and usefulness and has become a used because a really useful thing. It is the spirit that teaches; the letter, the mere form, teaches nothing, and you can get the spirit of the question only into the natural question.—*F. W. Booth, Pennsylvania.*

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No. 6.—Do you think it is a wise plan to teach the past progressive tense in isolated sentences when it is generally used in connected language only?

I do not think it is wise to teach any part of speech in isolation except when necessary for the purpose of directing the observation or concentrating the attention upon a single objective point, for the sake of precision or economy in time. In my own experience as a teacher I have found the past progressive tense to be most easily understood when used in connection with the conjunctive adverb.—*Isaac B. Gardiner, Arkansas.*

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No. 7.—Please state your method of teaching such words as to rain, rainy, rain, mud, muddy, to obey, obedient, so as to

make clear to the minds of your pupils the correct use of the parts of speech they represent.

Our pupils can acquire a correct use of such words, or any words, only by practice, repetition, the over-and-over-again method.

We must spell and write "without ceasing."

But it seems to me important that from the outset we should train our children to know the parts of speech.

They will not tell us that this word is a noun, another a verb, and another an adjective, but they come to feel the difference and to know the use of each in the sentence.

Colored crayons are helpful in teaching the parts of speech. The noun may always be the white word, the verb the blue, and the adjective the yellow.

Thoughtful children taught in this way will invariably ask when a new word is given whether it is white, blue, or yellow.

Lists of such words as are given in the question may be kept, in color, on the blackboard, as—

White.	*Blue.*	*Yellow.*
obedience	obey	obedient
rain	rain	rainy
mud		muddy
	sleep	asleep
	die	dead

—*Miss Caroline C. Sweet, Hartford.*

No. 8.—Would it be advisable to have a systematic course in action work to be followed by all the teachers?

If this means the teachers in the primary grades, I would say, Yes. There are no stronger believers in action writing than those who have given it a thorough trial after having practiced other methods. It is the most philosophical, comes nearer nature's way, than any other method of teaching language ever devised. The hearing child learns its mother tongue by seeing actions and movements and hearing the phraseology that is used to describe them. By repeated observation he gets a definite idea and the language form in which it is clothed. Knowledge does not come to him by a process of translation or explanation. His concepts are not obtained at secondhand, derived from other concepts, and perhaps hazy and indistinct. They are original and clear. His language concepts exactly fit his concepts of things, their movements and attributes. They come to him per force of circumstances;

he can not keep them out, and he does not wish to. There is this constant inpouring and with it goes the child's interest, nay, inquisitiveness and pleasure, to remove all obstacles and increase the volume of the inflowing stream. No effort is demanded except such as the child puts forth voluntarily. From the hour his little soul arouses itself on "the coasts of life" and sets forth "to travel inland" it begins to reach out and take hold as his bodily limbs reach out and take hold. There is no let-up except in the still watches of the night, when a kind Providence throws over it a restful oblivion. The teacher's business is to take this bundle of acquisitiveness and place before it the material it craves and in the shape best suited for absorption. Gouin, you all know, followed this course, giving attention to the simplest minutiæ. He got down on his knees, metaphorically speaking, perhaps literally, and watched the things that filled the daily life of a child; he followed and studied it and tried to put himself in its place; he noted how it busied its thoughts with the movements of the material external. The result was his marvelously successful method of language teaching. He who practices such a method philosophically, with due regard to the child's aspirations and limitations, lifts his work above the humdrum drudgery imposed by a taskmaster into the sphere of a science, and in his line is as much a scientist as Darwin and Huxley were in theirs. To do this work in our schools for the deaf with the highest efficiency requires not merely a scholar in the general acceptation of the term, but a close student of child nature—one whose mind is thoroughly trained, endowed, and equipped with resources. The superintendent who does not honestly seek to secure such talent fails to do his entire duty. It sounds very well to say that the child is father to the man; that the nature and constitution of the mind is always the same, and so if one understands his own mind he understands that of a child; but certainly different thoughts, likes and dislikes, pleasures, and ambitions enter into his broader life, beclouding his conception of the child's, and his capacity for assimilating has undergone a change. The Apostle Paul unconsciously gave utterance to a great pedagogical truth in declaring that when he became a man he put away childish things.

Should the action work be systematic? Yes, in the sense that it should be prepared with some regard to sequence and the degree of difficulty. Work done at haphazard is apt to be poorly done. To secure satisfactory advancement and avoid

possible traveling in a circle, prearrangement and apportionment of the work is necessary. The apportionment should, of course, not be arbitrary. The teacher should be allowed considerable latitude in selection. Due regard must be had to circumstances, to the ability and disposition of the child, and to opportunities afforded for teaching certain expressions. But, on the whole, a general trend should be followed.

If this question has reference to the whole school, if the one asking it wishes to know whether it would be advisable to have a systematic course in action writing from the lowest to the highest grade, my answer is emphatically in the negative. There comes a time in the educational career of our pupils when they ought to be able to use the knowledge they possess as a basis for acquiring more. When it is necessary with the higher grades to resort to material expedients as a means of enlightenment, illustration by picture is perhaps the best. It affords a higher order of mental discipline than pantomime or action writing, exercising the imagination to a greater extent and giving scope to the exercise of the reasoning power.—*J. W. Blattner, Texas.*

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No. 9.—Should not an endeavor to form the reading habit be given more importance in the school curriculum than is at present given?

There can be but one opinion on the desirability of having our pupils acquire a fondness for reading, nor is it necessary to enumerate the divers advantages certain to result from the acquisition of this habit. We have labored in season and out of season, by example and precept, to impress upon our pupils the importance of frequent and much reading, but I doubt if any of us is altogether satisfied with the result of his efforts in this direction. Some of our pupils, especially those whose language faculty was developed before the loss of hearing, take to books of their own accord, and all the help they need is advice as to the choice of their reading matter; but to the great majority of the pupils those books in which we ourselves found so much pleasure and instruction during our younger days are like so many treasure caskets to which they lack the keys.

Under "reading habit" here, I understand the reading of books, and not the so-called newspaper habit. Our older pupils are voracious newspaper readers, and, as is the case with a great many hearing persons, the daily paper in the city

or weekly paper in the country is almost the sole mental pabulum with many of them after they leave school. I do not wish to decry the value of the newspaper, and even the newspaper habit is better than not to read at all; still, the result is to pervert the taste, and I dare say investigation will disclose the fact that the newspaper-reading deaf mute fails to find interest even in the monthly magazines and illustrated weeklies that nowadays cater to the public taste in such a variety of form and subject, and that may be regarded as a sort of aristocratic news purveyors. The illustrations having once lost the charm of newness they are thrown aside, and the scrappy columns of the daily once more claim their due. "Books delight not me, nor magazines, either," is the constant refrain of such readers.

Therefore, while we should welcome with pleasure any nascent interest exhibited by our pupils in the newspaper, we should regard it but as a stepping-stone to higher things, and not rest until we have taught them to relish the more substantial mental food of books and magazines as well.

I am satisfied that it is insufficient merely to urge the advantages of such reading, and prepare all sorts of savory baits to lure our flies into our book parlors, if, as at present, we rely upon our pupils to employ their leisure moments for the purpose. There is no class of children that is harder worked than ours, or of whom so much is required. Their schoolroom hours are packed solid with recitations and legitimate schoolroom work; to these must be added the hours in the industrial classes, at morning chores, and at evening study; and with their day so filled with mental and muscular effort, their hours of leisure should be strictly devoted to the purpose for which they are intended—recreation. To demand that under such circumstances they should form the reading habit is an imposition similar to that the ancient Israelite had to contend with when he was required to build bricks without straw. Nor will I refer to the additional difficulties in this direction imposed upon our pupils by their language limitations.

In short, therefore, it is fatuous to expect our pupils to acquire the reading habit if left to themselves. We must endeavor to teach it, just as we try to teach geography, or arithmetic, or the habit of industry, or any other desirable habit, and the best means to accomplish this end would be to elevate reading to the dignity of a regular schoolroom exercise. The

public schools point the way, for though the various readers prepared for the benefit of the hearing child are mainly designed for elocutionary purposes, they do more perhaps to cultivate a taste for reading than any other branch of the curriculum.

This plan was tried in my class last year with very gratifying results. Each pupil was provided with a suitable book from the library, and a dictionary, and three-quarters of an hour daily was devoted by the class as a whole to an honest effort to read. Each new term was hunted up and the definition submitted to me to see if it was correct. If wrong, another trial was made. Phrases and idioms were explained, and every effort made to help each pupil grasp the spirit of his subject. At the same time I took every pains to make the exercise as informal as possible and divest it of all resemblance to task work. The result was that toward the end of the term the majority of the class had become quite accurate in selecting definitions appropriate to the text; in other words, had begun to understand the use of the dictionary. Their vocabulary was enlarged, their command of language better, and, above all, what had at first been much of a task became in the end a positive pleasure.

I think I can unqualifiedly recommend the plan. The thirty minutes, or forty-five minutes, or even an hour thus expended daily, may perhaps not be attended with immediately tangible results measurable to the sixth decimal degree; as might be the case were they devoted to arithmetic, or geography, or history; but in the vernacular of the day the investment will be found to pay, nor can I imagine a more practical or direct way to inculcate that very desirable virtue—the reading habit.—*G. W. Veditz, Colorado Springs, Colo.*

No. 10.—Is it possible for the average pupil to understand and enjoy such so-called juveniles as Alice in Wonderland, Little Women, and Abbott's Histories?

A liking for books is largely a matter of training, and, in my judgment, the average pupils can and ought to be led up to an understanding and enjoyment of such books. My own pupils, in their fourth and fifth year, take great delight in Alice in Wonderland. Much of the language is entirely beyond them, but a little old-fashioned pantomime here and there by the teacher easily clears away all the difficulties.—*Miss Caroline C. Sweet, Hartford.*

No. 11.—To what extent would you employ memory in the teaching of language to the deaf?

I do not regard memorizing as piece work of much value to the deaf in the acquisition of language, for the reason that they generally perform it in a perfunctory manner solely for the satisfaction of the teacher, whom they look upon as a task-master when given such work. They pay little or no attention to the meaning of the language thus memorized or to any peculiarity of construction, and they make no effort to let the language serve as a vocabulary for future use. Their energy is concentrated entirely upon the effort to get the language memorized as directed. They would lose nothing by being sent straight to bed rather than being required to spend the evening study hour in this species of memorizing.

However, memory is of great value in learning language, but this memory should be without any conscious effort. It should be the result of many impressions made while the attention is intensely active, as it is with hearing persons who hear language spoken in daily intercourse.

Here is where the deaf are at the greatest disadvantage as compared with the hearing. The degree of attention they bestow upon language set before them is lamentably small, and consequently their memory of language is very feeble.

What the pupil can not or will not do in the way of exercising the attention and memory remains for the teacher to bring out and encourage by proper exercises. A quick, ready, spontaneous memory, resulting from active attention, should be developed in the pupil. With this end in view, I would recommend frequent exercises in finger spelling of words, phrases, and short sentences by the teacher, to be repeated by a pupil in finger spelling, the pupil to be selected at random; or questions may be asked by the teacher in finger spelling which may be answered by the pupil in the same language with some slight change.—*D. W. George, Illinois.*

GEOGRAPHY.

No. 12.—What year should geography be introduced into the curriculum?

It depends upon the class. A very bright class may begin geography in the middle of its third year in school. A slower class, or one made up of younger children, should wait until the beginning or the middle of its fourth year. Finally, a

class made up of children both slow and young will wait until the fifth year. But a small percentage of our children begin geography in their third year, leaving the large majority beginning the subject in their fourth or fifth year. I should say the average pupil is ready for geography after three years in school.—*F. W. Booth, Pennsylvania.*

TEXT-BOOKS.

No. 13.—Should books for study be put into the hands of beginners?

That depends upon what is meant by study. If by study is meant to memorize set lessons, no; but I would give beginners books specially prepared for them—Miss Sweet's No. 1, for instance—after they had been in school three or four weeks. They will be interested in the pictures, will have their minds awakened by them, and will be kept busy looking at them. As they learn the names of objects and associate them with their written, spelled, or spoken names, they will gradually learn to read the printed names associated with the pictures and objects without any effort on the part of the teacher. As the pupil's vocabulary grows he will learn to read from the book the simple sentences which he has learned to understand so well when written, and will be easily led on to the reading of short stories. He learns to love his book, takes it up in leisure minutes, and with it profitably uses much time which otherwise would be spent in mischief.—*Job Williams, Hartford.*

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No. 14.—What text-book in history would you advise for beginners?

The introduction of history to a class of deaf children by means of a text-book prepared for hearing children has, so far as my experience goes, been far from satisfactory. My personal knowledge of introductory text-books in this branch of knowledge is limited to the following:

Goodrich's Child's History, Goodrich's American Child's History, Montgomery's Beginner's, Lossing's Primary, Barnes's Primary, Eggleston's First Book, and Dodge's Stories of American History. The same objection has been found to all—the language is so far ahead of what the deaf pupils understand and use that the study of the book is a wearisome task, preventing the interest on the part of the learner that is essential to the right study of history or of anything else. There is

but one historical book which I have known deaf children to receive with real interest, and that is Crane's Bits of History. But this is rather a historical reader than a text-book for teaching historical facts.

Stories of all kinds, written expressly for deaf children by teachers who understand their needs and the limitations of their language, are read with avidity and real enjoyment by the children. And this suggests my answer to the question. I think that the best introduction to the study of history in the case of deaf children consists of lessons prepared by the teacher, comprising the leading facts, couched in language that is within the comprehension of the pupil. Supplementary to these, I would have the stories and incidents accompanying each period told to the class by means of signs, finger spelling, or speech, according to the method of instruction pursued, these to be reproduced in writing by the pupils, corrected, and copied into notebooks.

I hold that the transition from our ordinary preparatory language work to the language of text-books for hearing children is far too abrupt, and that the best way to introduce all the common-school branches is by means of introductory lessons prepared by an intelligent teacher.

Lest, however, the one who asked this question may think that I have failed to answer it after all, I will add that if it is a matter of choice among text-books for hearing children, I consider Goodrich's Child's History the one best adapted to an average class of beginners.

In what I have said on this subject, I have had in mind only deaf children without any natural command of English. The above remarks are not intended to apply to deaf children who learned language before they became deaf, a class commonly but not happily called "semi-mutes."—*J. L. Smith, Minnesota.*

No. 15.—What is the most suitable book in English history for the deaf? In American history?

For an ordinary class of six years' standing I have found nothing better than Miss Yonge's History of England. The language is simple, lucid, and well-chosen; the facts are important, without unnecessary details of battles; and there is no thrusting of unimportant dates upon the child's attention. The human interest is uppermost throughout. Moreover, the book can easily be gone through in a single year.

In American history I consider Quackenbos's as satisfactory as any for use with the deaf. It is free from patronizing "I have told you's," has useful maps near the lessons, sets of questions useful in reviewing, the Declaration of Independence, and the Constitution, with amendments.—*A. S. Clark, Hartford.*

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No. 16.—What is the best series of readers for the deaf?

I would answer this question as Yankees are said to answer all questions, viz, by asking another question.

I would first ask, What is meant by a reader? The same word does not mean the same thing to all persons.

To the hearing and speaking youth in the public schools a reader is a book of choice selections by the use of which he is expected to learn the art of reading correctly, elegantly, and forcibly. Delivery is the main object for which he uses the reader. By learning to express the thoughts of others correctly and impressively, he is expected to be also learning to deliver his own ideas in a way that would carry conviction, provided he ever had any ideas that are worth delivering, either with or without the express company's well known three-letter trademark, C. O. D. Now, bearing in mind that the question I am to answer, or rather, try to answer, is addressed to teachers of deaf persons, it seems to me rather ambiguously worded. Certainly delivery has nothing to do with the use of readers by such persons. The forcible and elegant communication of their own thoughts is not supposed to be directly or specially influenced by the use of any reader.

If the person who asked the question meant by readers books that are to be text-books in language, the correct use of language being the main object for which the reader is to be used, then I would say at once that the American Asylum Series is the best series of readers I know of. But is that all that this question means? I would give it a broader interpretation and would assume that its object is to elicit thought upon the topics of general reading. I am saying nothing new when I say that the deaf are not the readers that they should be. Lack of suitable reading matter is responsible for this defect in our training of the deaf, and the furnishing of suitable matter rests largely with the teacher. I have not the time at present to present my views in detail, but must content myself with merely calling attention to some things which I think bear upon this question.

Supply pupils during the first four or five years of school life with a little daily paper with institution news items on one side and on the other side stories, news other than local, written in language involving principles known to the pupils, suiting the subject-matter and the phraseology to their understanding. This work should be done by the teachers, each teacher preparing for his own classes such matter as seem best suited to them. These little sheets will be eagerly sought after and diligently read, and the child thus early in his career will learn to read for the pleasure it gives and language will mean something to him. Follow up this little paper with books of short stories. See that these stories are read through. Each child should have at least one scrapbook into which he can paste such stories as strike his fancy and interest him. He will thus show his teacher in what direction his thoughts tend and materially aid in shaping his reading. While I would not discourage the use of the dictionary, I would encourage children to hazard a guess at the meaning of new words from the context. Keep ever before the pupil the fact that the more he reads carefully and intelligently the more life will hold in store for him. Continue this line of reading, but suiting the matter, both in length and character, to the growing development of the pupil's mind until he is at a point where he can take some book divided into chapters and read it through. Watch carefully the reading of the first two or three books; talk about them with the pupil as they are read, and keep up the interest to the end. As soon as able to comprehend, encourage the reading of newspapers. In this, as in all our educational work, success will depend much upon the way the work is done at the start. A house started upon a sandy foundation may come to grief before the shingles have been on long enough to get wet.—*D. F. Bangs, North Dakota.*

No. 17.—Are there any text-books on ancient history and civil government specially prepared for the use of deaf pupils? If so, name them.

I know of no such text-books, nor are my fellow-teachers better informed. Specially prepared books on both subjects, if made brief yet comprehensive and not too much simplified, might be used with advantage. When deaf pupils have arrived at the age when such subjects are to be studied, it is well to avoid reducing their lessons to too low a level, which is a tendency when special preparation of books is attempted.—*E. J. Hecker, Indiana.*

GRAMMAR.

No. 18.—Considering the weakness of the deaf in language, is it not better to confine the study of technical grammar to the elementary principles in the form of prepared lessons and employ the extra time in more important language work?

Our aim in teaching language to the deaf is twofold. We wish to render them capable of understanding and using colloquial language freely and correctly, and we also wish to give them the ability to read books with pleasure and profit.

The first aim—the mastery of colloquial English—can never be attained merely by the study of technical grammar, for colloquial English is largely made up of idiomatic forms in the acquisition of which the rules of technical grammar are of little use. I have known deaf-mutes who were adepts in the technicalities of grammar, able to parse and analyze long and complicated sentences, and to express themselves in strict accordance with grammatical rules, who yet could not carry on a conversation upon any of the ordinary affairs of life in good idiomatic English. The mastery of idioms can be acquired only by persistent practice in their use, and grammatical rules are perhaps more of a hindrance than a help in this direction, since they lead the pupil to depend upon his memory of rules rather than upon his memory of language. The practice essential for the mastery of colloquial English can best be given, in my opinion, by what is called the natural or intuitive method rather than by the grammatical or scientific method. Especially is this true in the instruction of young children.

On the other hand, for the attainment of our second aim, which is to give the deaf the ability to read books with pleasure and profit, the study of grammar is a great help. I have known deaf-mutes, taught exclusively by the intuitive method, who used colloquial English so freely and correctly that it was hard to believe they were congenitally deaf; but they were unable to pursue a college course of study, for they could not understand the language of college text-books; the prose of Macaulay and the poetry of Tennyson were alike beyond their grasp; and their attempts at writing English in the form of connected composition were failures. In the comprehension of the language of books and in the writing of compositions they were surpassed by students who were inferior to them in the use of colloquial English.

Now, there is no reason why, provided sufficient time is allowed, both the aims of language teaching may not be attained. "These ought ye to have done, and not to leave the other undone." During the first two or three years of the course, especially with young children, the intuitive method should be followed, and no formal instruction in technical grammar should be given. The only exception to this rule may be that when, as sometimes happens with bright children, the pupils begin to discover and formulate grammatical principles for themselves, their efforts in that direction should be judiciously encouraged. Later in the course, whether the initiative comes from the pupil or from the teacher, the principles of grammar should be thoroughly taught, and, in connection with the study of text-books and wide general reading, a great variety of sentences in prose and poetry should be carefully analyzed. The intuitive method will give the pupil a mastery of colloquial language; the study of grammar will help him to understand the language of books, and while it will not of itself open to him the temple of literature and knowledge, it will at least give him the key which will admit him to its vestibule.—*Edward Allen Fay, Gallaudet College, Washington.*

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No. 19.—What percentage of deaf pupils taught grammar are, in your estimation, benefited by the study?

The benefit or injury done by the teaching of grammar can not be estimated by a percentage of pupils. One might as well ask "what percentage of pupils are benefited or damaged by an education?" The object of the question, however, probably is to get an expression of opinion in regard to the value of grammar as a study. Its value to children is very small. Grammar is a study for mature minds. The time spent upon grammatical definitions, rules, technicalities, and nomenclature is worse than wasted. Declensions, conjugations, analyses, and parsing are refinements that delight a few older minds, but are an imposition upon children. Language is best learned by using it, not by filling the brain with a lot of rubbish about it. Strange that some of the educators of the day do not see the cruelty and injury of compelling children to waste their time in plodding through such a mass of useless stuff as is found in the text-books thrust upon our schools.—*John H. Woods, Illinois.*

No. 20.—Is grammar of any aid in the acquisition of language? What is your opinion of it as a text-book study?

I should smile and say, Yes; but for beginners grammar need not be used as a study, because it is of no practical value to them. They should learn to express their own thoughts in language, either written, spelled, or oral, and how to arrange words they learn in grammatical order of sentence-making under the careful training of teachers for several years. It is very important to have them learn to construct sentences that begin with a capital letter and end with a period, and also to understand the correct meaning of words when they learn. They should use all opportunities to increase the sum of their knowledge of language by reading, conversation, and observations; and original exercises, stories, and compositions in practical and sufficient writing give them the best chance to correct and improve their language.

It is my opinion that grammar should be a text-book study for those who are sufficiently advanced, in order to enable them to comprehend and use something better in improving and constructing sentences with proper meanings of words and all their relations to each other, so as to help them in the understanding and acquisition of language. From my observations with the deaf, I, however, see that grammar is considered quite a hard and dry study for the majority of them, who are not benefited by learning it, nor understanding etymology and syntax, contrary to my experience with it, which was of great benefit to me in having obtained a successful and thorough mastery of language.

The use of signs in the daily talks of the deaf has nothing to do with the cause of mistakes, careless blunders, wrong uses, unintentional ideas, unknown meanings, and misspelling in their written or spoken language in many cases, but they are all due to poor or deficient knowledge of principles of grammar, by which a better command of language can be acquired; and the amount of success depends upon the amount of practice in study.—*Lars M. Larson, New Mexico.*

DISCUSSION.

Dr. WILKINSON. I would abolish the whole thing from the institution if I could do it. Did you ever watch a child develop? If it is taught correct speech, it will speak correctly. My own

daughter never studied grammar until she came to prepare for the university. As one of the studies necessary, she had to study Latin grammar, and she used just as good language as I do when she began the study of grammar.

You go out into the slums, where children are brought up in all sorts of vile and incorrect speech, and the child imbibes it. The child in the class room who comes into communication with good speech and good writing will get into correct speech. Of course a child gets very little practice in the schoolroom. I think we do not give them enough practice in speaking. We forget that the children do not get as much in the schoolroom as they do in the world. The only correct way to give pupils a knowledge of correct writing is not through the rules of grammar but through the careful study of expression. It makes me tired to see the children drilled in the rules of grammar that they do not understand. I am glad to see that in our best schools grammar is recognized as an advanced study. Of course when they go to college they must have a knowledge of technical grammar. In getting a pupil ready for college I would not have him study grammar until the last year of the course.

A thing suggested itself to my mind some years ago, and grew out of looking over slates and correcting them. You will find the same old mistakes many times. I put a correction card containing a list of corrections into the hands of the teachers, and it gives the number of each correction. The theory is to put a line on the side of the leaf or margin, with a number, and then the pupil looks up the card and sees what No. 5 is. By and by it becomes associated with this error in his mind. We accomplish good results from this kind of work. We should note down these common errors and correct the children's errors. We have extended our list to 25; and when you have taught them to do this you have corrected many of their errors, and you have increased their ability to use grammatical constructions. I want to express my disapprobation of grammar as taught in many common schools, as well as in the institutions.

Mr. BOOTH. Mr. President, I have heard of this method of Dr. Wilkinson's before. I, for one, would like very much to have Dr. Wilkinson prepare an article, covering the whole ground and including this chart which he uses, and then have him publish it in the "Annals." I want to ask this now and

here so that we shall be sure to get it. I asked for this same article years ago, but never got it.

Mr. RAY. Mr. President, I want to ask a question, and that is whether you would give them the correct form to work by. In our own work with deaf children we like to keep before them always the best form. When a mistake of any kind occurs in their presence we obliterate it as quickly as possible and never present the incorrect form.

Dr. WILKINSON. I want to say, in reply to the questions, that we do not use the form. It is only for the temporary use of the pupil, so that he can refer to it. He is supposed to have learned the true form.

ARTICULATION.

No. 21.—What expedients do you employ to get pupils to distinguish between the sounds of *b* and *m*?

In teaching pupils to distinguish between the sounds of *b* and *m* I have not had as much difficulty as in some other elements which are not so closely akin to each other as the above.

In teaching positions, *p*, *b*, and *m* all being lip consonants, I teach them in this order, *p*, *b*, *m*. Pupils easily distinguish between *p* and *b*, as they are nonvocal and vocal. Follow these with *m*. Have the pupils touch the side of the nose when the sound of *m* is given and let them keep the finger there when the sound of *b* is given and they will consequently feel no pulsation. Then tell them why this is so, which is quite important.

I find diagrams very helpful in explaining this difference; also a plaster cast in profile, one section being taken off so the different organs can be seen. You can tell pupils that the palate is depressed in *m* and the meaning will be very vague, but if they see how it can be in that condition they will remember and understand it.

In *b* the pressure of the center of the lips is greater than in *m*, but the lips are closer all the way around than in *b*. To illustrate this I press the hand, arm, or shoulder of the pupil with my finger harder and shorter for *b* than for *m*, but make the pressure more continuous for the latter.

Where there is a tendency to nasality *m* has to be dropped for a while till the organs are better adjusted, but the position can be given very early in the course of instruction.—*Miss Mary T. G. Gordon, Washington, D. C.*

No. 22.—Where it is possible to have but one teacher of speech should the time of that teacher be given to all who might be benefited by speech instruction or confined to a single oral class?

There are two sides to this question, but I think the weight of argument is in favor of confining the work of the one teacher of speech to one class, thus giving an opportunity for the most thorough instruction on the part of the teacher and for the best results on the part of pupils.

Then if the purpose is to test oral methods by results, there will be a full and fair trial. If a community or a board of trustees is to be interested and enlisted in an extension of oral work the best evidences of the capability of the deaf to profit by such instruction can be presented, and if the object is simply to promote the best interests of the pupils under instruction for the time the better results with the few will probably outweigh, in the aggregate, the smattering that will be obtained if the labors of one teacher should be divided among the many pupils of a large school.—*Thomas L. Moses, Tennessee.*

No. 23.—In a school not exceeding an enrollment of 100, conducted under the combined system, how should speech be taught?

Every pupil entering school for the first time should be given a trial in the oral department of sufficient length of time to determine the method to be used in its instruction. The time consumed in this trial will depend upon each individual pupil.

In a school of the size designated it is, of course, neither advisable nor practical—if it is advisable anywhere—to attempt to isolate the oral and the sign pupils into separate and distinct departments.

In school proper those pupils that have been selected for the speech classes should be taught by speech exclusively, except where it is necessary to resort to signs for explanation, in order to give speech in the most rapid manner, and I include in signs everything other than speech.

Outside of school proper they associate with the other pupils and attend chapel exercises and lectures delivered in signs, but the different hearing people, whose duty brings them in contact with these pupils, should be required to use speech with them as far as practicable in all their communications about the premises. In this way the children soon learn the utility of speech and will not hesitate to resort to it if encouraged to use it.—*W. O. Connor, Georgia.*

No. 24.—When should the first lessons in speech be given to a child of average ability?

This question has been under discussion for a number of years and has given rise to a great diversity of opinions among instructors of the deaf. I shall only attempt to answer it briefly from the knowledge gained by my own experience, which, though it covers only a space of a few years, has been, nevertheless, considerably enlarged in that time by the numbers of little deaf children, of ages varying from four to twelve years, who have come under my instruction in speech.

I think I may safely, conscientiously, and positively state that far better results have been obtained from the very little ones than from those sent to school in later childhood. In fact, our most successful little talkers are those who have been under instruction from the ages of 4 and 5. It can not be denied that the organs of vocalization are much more plastic and susceptible to mobilization and development at this early age than had they remained inactive and unexercised for a longer period. Then, while the ability to imitate is no less in a child of 5, his mind will far more readily receive at this early age than after a longer period of dormancy. Add, also, to this the gain which several years of systematic training and exercise in the right use of the vocal organs will have to bear upon the child's future success. I believe, too, that the voice will be relieved from much of the disagreeable harshness—the chief objection to the deaf-mute's speech from a stranger's point of view—and assume a far pleasanter and more natural tone should the lessons in articulation commence before the vocal organs have become hardened and reduced to a state of immobility by years of nonuse and abuse.

Of course, it follows that much more patience and perseverance are requisite to teach these little ones, and many changes will be essential to meet the requirements of a class of very young children. The periods will of necessity have to be shortened, and the lessons in speech supplemented to a considerable extent the first year by kindergarten exercises for developing sight and touch by simple calisthenics and by other recreation. With this outside work a child of average ability at the age of five would have no difficulty in mastering the majority of the elements, simple and in combination, and a number of words which can be readily combined into very easy sentences. Some of the hardest elements, as k, ng, x, r, might have to be left very likely until later, but this fact need

not discourage a teacher, for it is by no means surprising that many of our little deaf children find these elements hard to articulate when we consider that the tongues of our hearing children are often unruly when learning to talk. Even they take a long time to acquire the suppleness and flexibility necessary for the clear pronunciation of words.

Do we not teach our hearing children to talk at the age of two? Then, why should the education of our little deaf children, who are so much more dependent upon their teachers, and whose time in school anyway is very limited, be so neglected? Why should these unfortunate little ones be left until the age of eight or nine, and possibly later, before receiving instruction? It seems to me the fact that we teach babies to speak would indicate that the organs of a deaf child were ready and waiting to be used and taught. The sooner begun the better. The sooner a good habit is formed the better. Lay the foundation early and well. That which is done gradually and persistently grows up with a child, becomes a part of his being, is interwoven in his nature, and is never forgotten.—*Helen B. Andrews, New York Institution.*

No. 25.—Give the breathing and vocal exercises to secure correct management of the breath in speech.

The following are some of the exercises practiced by classes in the Horace Mann School for the purpose of acquiring correct habits of breathing and clear tones in speech:

Let the tongue lie soft and flat in the mouth with the point at lower front teeth, while the jaw is slightly dropped. With this position and with tips of fingers upon diaphragm, feel the action of the diaphragm. Again, assume position of tongue and observe simultaneous action of jaw in dropping and the outward movement caused by action of diaphragm. These without voice.

After pupils readily observe the action of the diaphragm, and while keeping the tongue in position, allow them to give the sound *ä*.

(The production of voice is directly associated with the action of the diaphragm, and vibrations elsewhere are not noticed.)

Other vowels follow, taking care to avoid drawling the sound; on the contrary, presenting the idea of giving each as a light, delicate touch.

With tongue and jaw in position, and while feeling the

action of the diaphragm, count, one! Relinquish position. Again take position; count, one! two! Relinquish position. Again take position; count, one! two! three! Relinquish position, etc.

Rhythmical exercises with vowel and consonant, varying length of syllables. Ill.: *pär*, *pŭ*, etc.

Point of tongue exercises: With tongue and jaw in position, feeling action of diaphragm, raise point of tongue for *t*, hold, then relinquish. The air contained in the mouth cavity gives the "percussive recoil" necessary to a well finished *t*. This exercise with *t*, *d*, *k*, *g* as initial and final elements.

Pronounce single words with thought of giving out vowel sounds to a distant object.

Phrases given with aid of directive gestures at first, with hand resting upon a piano later on.

Short selections of easy rhythm practiced with piano to gain fluency in speech.—*Miss Sarah Fuller, Boston.*

No. 26.—What exercises are best for securing elasticity of the pharynx?

Elasticity of the pharynx, as we usually speak of that organ, is secured not so much by exercises embracing it as a whole as by separate exercises for those parts most concerned in speech and most susceptible of being trained. This would include gymnastics of the soft palate and of the pillars of the soft palate as well as those included in the broader term the pharynx.

For exercises for the soft palate we have collected the following:

1. Raise the palate, slightly at first, then as high as possible, care being taken to keep the palate still and to breathe through the mouth.

2. Breathe through the nose but with the mouth open, keeping the tongue still and as low as possible at the back.

3. Hold the palate up, give voice, and stop completely before lowering it.

For the pillars of the soft palate:

1. Draw the pillars together. After considerable practice they may often be made to touch.

2. Separate them as far as possible, holding the soft palate up.

3. Keeping the pillars in a given position, breathe through the mouth; then add voice.

For the pharynx as a whole:

1. Close the lips tightly and make an effort to blow. This causes expansion of the pharynx. Open the lips and the pharynx suddenly contracts.

2. Contract and relax the muscles at will.

3. Think a gape and sound *aw*.—*Tunis V. Archer, Indianapolis.*

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No. 27.—Is much concert drill in reading from the blackboard or charts of any great value to deaf children?

Concert drill in speech for deaf children has a substantial value, which should not, however, be overestimated. If care has been taken to see that each pupil knows the phonetic equivalents, or more properly the "positions" for the English characters, and that he also understands the language, a concert drill from board or chart has two distinct advantages. It saves time; but better than this, it affords practice in transforming readily the printed thought into vocal speech. Naturally this concert drill must be directed by the hand and lips of the teacher to insure some degree of unison.

Poetry may be most profitably recited in this way, also prayers and portions of Scripture.

With some practice a class comes to like the exercise and to do it very well.—*A. S. Clark, Hartford.*

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No. 28.—Should articulation and lip reading be marked on the same scale as other studies?

If articulation and lip reading are marked at all, I should mark them on the same scale as other studies.

Why mark at all?

Whatever advantage is gained by examination and marking in other studies is surely of equal advantage in estimating the pupil's rank in the class and his comparative acquisitions in all lines of study. If he be examined in reading, arithmetic, geography, history, etc., while no attention is paid to his improvement in articulation and lip reading after constant and careful study, and no attempt is made to note the corresponding advancement in these attainments, he may quite naturally infer that they are of minor importance, simply an incidental. Notwithstanding the fact that examinations have been abused, yet a test may be so wisely and considerately given that even the poorer pupils need not be made to feel unhappy nor uncomfortable.—*Miss Almira I. Hobart, Delavan, Wis.*

No. 29.—How would you conduct an examination in speech and lip reading?

The examination in speech and lip reading would of course vary with the grade of class examined.

Speech.—First. Elementary sounds, vowels, and consonants.

Second. Simple combinations of vowels and consonants.

Third. Familiar and unfamiliar words and sentences.

Fourth. Reading sentences unfamiliar to the examiner.

Lip reading.—First. Writing the elementary vowel and consonant sounds spoken by examiner.

Second. Writing simple combinations of vowels and consonants spoken by examiner.

Third. Writing familiar and unfamiliar words and sentences spoken by examiner.

Fourth. Telling connected narratives and having pupils reproduce them.

In marking we use the 100 scale and take off for every incorrectly spoken or written sound. Such sounds as *t*, *s*, *d*, *f*, *s*, *r*, etc., might be used correctly as far as lip reading was concerned, but form the wrong word, such as fat for fad. This would not be considered a mistake.—*Miss Florence C. McDowell, Mount Airy, Pa.*

ARITHMETIC.

No. 30.—How can we make our pupils apply reason and common sense to the solution of arithmetical problems?

This question should have been asked of my friend and colaborer, Mr. G. W. Veditz, who has been wonderfully successful in teaching arithmetic and whose pupils come to me so well trained in that branch that few of them give me serious trouble. There are, however, some fundamental principles which, from observation and experience, I deem absolutely necessary in the proper instruction of any child in arithmetic, and I shall, in the limited time allotted to me, give you two or three of these, leaving the detail to be filled in by the hearer.

In the first place, I should insist on a thorough mastery of the four processes as applied to whole things and to parts of things. Illustrating each process in the concrete, go then to the abstract and drill, drill, drill until the child does all kinds of work without conscious effort. Along with this there should go, taking them one by one, a drill in the language forms used in arithmetic until the child fully understands the meaning.

All new language constructions should be placed on the large slate and carefully explained, then examples given to be worked one at a time before the class until the dullest pupil fully understands. Here the teacher who knows signs thoroughly has a great advantage, since he can know at once just what is in the mind of the pupil. The teacher should exercise the greatest care in all the work, both abstract and concrete, to use the correct form and to be sure that each step is perfectly understood in itself and in relation to what has gone before. In all problems have the pupil write enough to show that he has a clear idea of what he is doing, and always give enough problems to enable him to master the principle and to give him confidence in his ability to work them. Thoroughness must be the watchword from the beginning, and the exercises must be so varied as to prevent their being tiresome.

With an enthusiastic teacher there will be enthusiastic pupils, and if pupils can be made to like the study of arithmetic, it will present little more difficulty than any other study. My experience has been that children do not like arithmetic because they do not understand, and they do not understand it because they were not properly trained in the elementary principles.—*W. K. Argo, Colorado.*

INDUSTRIES AND PHYSICAL TRAINING

No. 31.—Why is physical training so necessary for the deaf?

Physical training has always been an essential feature in the educational system for hearing youth. Every reason which makes it so applies with even greater force in the education of the deaf. It requires mind properly to control muscle. The training that produces a harmonious development of the muscles and makes their proper control possible must necessarily be accompanied by corresponding mental development. Mental power thus acquired paves the way for manual, intellectual, moral, and religious instruction. In view of the great difficulties in the way of the acquisition of an education by the deaf, such a valuable aid as physical training ought not to be dispensed with. Diseases causing deafness do not always leave the body and mind in their normal condition. Subsequent confinement in schoolrooms, shops, and city homes makes more serious complications possible if not counteracted by timely and judicious physical exercise. Those who stand most in need of such training are the ones least apt to take it voluntarily.

Education, to be real education, must include the training of the body, mind, and soul coordinately and neglect no one of them.—*Rev. Jas. H. Cloud, St. Louis.*

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No. 32.—Is not drawing of great pedagogical utility?

Certainly it is. The teacher who has that happy facility has the advantage over those who are unable to draw, in that he can illustrate for the benefit of his pupils things which he could not convey in words. I have in mind a teacher in our school once who made great use of drawing in his class room. The word "round steak" would be meaningless to the average pupil, and as signs are restricted and pictures are not always available the teacher simply took up a crayon and drew on the blackboard a picture of the object, which the class at once recognized. This teacher told me that he found his knowledge of drawing of great assistance in all the years he has taught the deaf. It is not necessary that we make artists out of our pupils. That would be impossible; but I firmly believe that to deprive our pupils of a chance to learn drawing would be the same as depriving him of a part of his education. My husband, who teaches printing to the pupils in the same school, has often said that if he possessed a good knowledge of drawing he could teach better, and that if his pupils had the same training they would make better printers, for a large part of job work requires as much judgment in balance and harmony as the artist does in the use of colors.—*Mrs. F. K. Porter, New Jersey.*

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No. 33.—How early should the teaching of drawing be entered upon with the deaf?

The teaching of drawing covers such a large field that to answer the question fairly it is necessary to know what the object of instruction is, what kind of drawing is meant, and what proportion of the pupil's time is to be devoted to the study.

In many schools only one or two recitation periods a week are allowed for drawing. In these the artistic side of the subject should receive most attention, including study from life, nature, still life, and imagination. If geometric drawing or the study of the solids is meant, let it be a part of the academic course; if mechanical drawing is considered, no instrumental work should be begun before the fifth or sixth year.

We can not consider the teaching of drawing before the child enters the kindergarten, but that is the best time to begin to learn, and he usually does, in the best possible way, by making mud pies. Clay was discovered before paper, and modeling should precede or go hand in hand with drawing. The value of modeling in developing the creative faculties can not be overestimated.

We are not teaching drawing in order to have a collection of fine-lined, neatly shaded "pictures" to show each year. We are trying to develop the character of the child, to strengthen his will power in execution, to aid him to express his thoughts artistically, and to turn his unbounded imagination and ideality into practical and healthy channels in illustration and design.

Art is a part of the child's nature. It can only be separated from him by monotonous labor and carefully prepared systems of instruction which require the least trouble in teaching; even then his individuality and expressiveness die hard.

Picture writing began with the beginning of the race; so should it begin with the first year in the kindergarten.—*Miss Marie Le Prince, New York Institution.*

No. 34.—Are our deaf girls receiving as much benefit from industrial training as it is possible to give them? If not, what can and should be done to increase their efficiency and fit them for the duties of life?

It seems that the girls under our care at the New York institution are receiving as much benefit from industrial training as is possible for them, considering the short space of time they have to devote to matters aside from their school duties. They here receive a training which will enable them to compete with hearing and speaking girls, if they are called upon; and what more can be expected?—*Mrs. Julia F. Wilcox, New York Institution.*

MANNERS, MORALS, AND RELIGION.

No. 35.—Would it not be advisable to have religious exercises for the primary pupils in the schoolrooms instead of in the chapel?

General daily chapel exercises were abandoned in the New York institution some two years ago, for the reason that it seemed impossible to provide for a religious service which would be of benefit to the 5-year-old kindergarten child and the mature pupil of the advanced grade. The present practice,

which seems to fulfill the requirement, is to require each teacher at the beginning of each session to conduct a religious exercise in which the pupils can join.

The results warrant the continuance of this practice in the New York institution.—*Enoch Henry Currier, New York Institution.*

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No. 36.—What influence have signs on the manners and morals of the deaf?

The sign language, like any other language, is a medium of expressing ideas. Its effect on manners and morals should be not different from that of any other language. For the great majority of the deaf it is the freest and clearest means of communication, and if everybody understood it it would be for the deaf the best means of communication. That there are some very coarse signs and uncouth sign makers is no more the fault of the sign language than are the low, disreputable talk and vulgar gestures of some hearing people the fault of spoken language. It is not language per se that affects manners and morals, but the use or abuse that is made of it. There should be the same care to avoid slang and rudeness and vulgarity in the one language as in the other. Intelligence should bring with it refinement, and as the sign language is the readiest means of awakening the mind of the average deaf-mute, its proper use should tend to refinement in manners and morals.—*Job Williams, Hartford.*

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No. 37.—What would you do with habitually careless pupils who come to your room lacking what they need in their class work?

Kindly allow the consequences of his carelessness to come as heavily as you think judicious upon him. Arrange it so that he must see that his suffering is from his own fault; that while you sympathize with him you can not shield him; that you have no control over the matter. Should it become serious, let him understand that you are willing to help him if he requests you to.—*W. H. De Motte, Indiana.*

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No. 38.—What book would you recommend for religious instruction?

First, for a long time instruction must come from the heart. As soon as a book can be used to advantage I recommend "Great Truths," by George L. Weed.—*W. H. De Motte, Indiana.*

No. 39.—How should first, second, and third year pupils be taught by one teacher in Sunday school?

One teacher can not successfully teach first, second, and third year pupils all in one class. I would suggest that assistance should be called in. If this be impossible, then I suppose short lessons should be given to suit each grade.—*F. B. Yates, Arkansas.*

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No. 40.—Which would you teach first, Old Testament or New Testament stories, and why?

Pardon me, but I can see very little reason for a choice between the stories of the Old Testament and those of the New Testament as to which should precede. If there is any special choice, it seems to me that those of the Old Testament should be taught first, since there are many references in the New Testament to incidents related in the Old Testament which would not be understood by pupils unless these Old Testament stories had first been taught. One striking illustration is that referred to with reference to Moses lifting up the serpent in the wilderness. I can see, too, some reasons why I should prefer with children to use the New Testament stories. First, since our children are more likely to be directly interested in matters pertaining to the life and labors of our Saviour.—*John E. Ray, North Carolina.*

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No. 41.—Should lady teachers conduct chapel exercises?

Educational acquirements and spiritual experience should determine the fitness of a teacher for the discharge of this duty.—*Rosa R. Harris, Maryland.*

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No. 42.—What religious instruction would you give a kindergarten class?

As religion is true living, and true living necessitates a right understanding of relationships and the laws which control man and the universe, all instruction is religious in its nature.

"Come let us live with our children," gather them about us on a Sabbath "morning circle," and every kindergartner knows how much the morning circle means to her family, and with a genuine sympathetic interest, which will meet with a ready response from the children, talk over the events of the week, sing the songs they love, tell the stories which inspire to noble

action, and help them to realize that life is real and earnest, and that to be good we must "be good for something."

We find that children, living as it were in a world of their own, have standards of right and wrong, and, though unconsciously, do to a certain extent shape their lives in accordance with fundamental laws.

The family life is always the center to a child, and here we find illustrations of most vital relationships, which, if emphasized and explained, will help the children to form ideals that will inspire them consciously to give and receive love in all their social intercourse.

The "good morning" spoken in love comes indeed like a benediction, fills each heart with joy and gladness, and brings a sweet sense of unity.

Children are so dependent upon father's and mother's love and care that a gracious acknowledgment from them of this love and the thoughtfulness of those who provide home, clothing, and food easily opens the way for a recognition of "the Father of all above, below," from whom cometh every good and perfect gift; the Father who not only gives us earthly parents, but floods the earth with sunshine, beautifies it with flowers, and gladdens our ears with the song of birds; whose life principle is everywhere expressed.

A recognition of universal life—life divine in its nature—requires no great effort on the part of children, and we can suggest at least the laws which govern its expression in the animal and vegetable kingdoms.

Let the children live near to nature's heart, enjoy the sunshine, care for the flowers, feed the birds and pet animals, and thus learn, through their own observations and experiences, that the same relationships exist everywhere, the same loving care is everywhere given by mothers to their young, and that a wise law governs and controls all plant life.

Naturally these observations and experiences will be related on the Sabbath morning circle, and then is our opportunity to give another touch to the ideal already taking form in the child's mind. What lessons do the flowers teach, blooming so freely and filling the air with sweet perfume? What about our faithfulness in the care of them? Does the loving care of the mother bird remind us of one who is ever ready to supply our needs?

From this outlook into nature we turn to what alone can satisfy the growing mind—an opportunity for self-expression.

Even in their play children learn the value of cooperation, see the law of cause and effect illustrated, and realize that the success of a game depends upon each individual.

Again, the family life affords illustrations of these laws in operation, and the desire for self-expression makes the children active workers in this miniature world. We hardly need to suggest the consideration for others which helps them to close the doors softly.

Gentle hands draw the shade and smooth mother's brow when the tired head aches. Willing feet run on errands and bring the thread or needle for mother's use. They can even be trusted to wash the silver and lay the table, and never is more willing service given than by these little helpers. Freely they have received, freely they give. Knowing is here learned by doing, and religious insight developed by the home life.

So on our weekly circle we will speak of these modes of expression, with suggestions to look about for opportunities to render the same loving service wherever they may be, and see that the same laws govern and control broader relationships.

As the lives of great men all remind us what we can do with our own, and paintings and statues inspire us by revealing the ideals and standards of the artists, let us become familiar with their lives and works, and through the inspiration thus gained reach up to the Christ ideal, learn that this Elder Brother, who came as a little child, was tempted in all points as we are, and yet without sin; that He was subject to and faithfully obeyed the same laws which govern and control us; that He rendered loving service to all, and by His life showed us how to include in one universal brotherhood the entire human family, "For He hath made of one blood all nations and peoples."

Can you see it—this ideal we have formed of an individual, "the Christ," who recognizes universal divine life—and consciously express it; who lives in obedience to and understands the laws which govern right relationships; and do you realize how such an ideal will help the children to "act—act in the living present, heart within, and God o'erhead?"

I should consider deaf children of kindergarten age, as far as this subject is concerned, until they are 12 years of age.—*Miss Charlotte L. Morgan, Oakland, Cal.*

MISCELLANEOUS.

No. 43.—How often should teachers' meetings be held?

This depends upon the size of the school. Teachers' meetings are of real value when they are interesting and are not considered irksome by those who are to take part in them. In a small school with seven or eight teachers once in two months is perhaps often enough, while in a school with from twelve to twenty teachers the meetings should be held at least once a month.—*W. K. Argo, Colorado.*

No. 44.—What part should memory play in the study of history, geography, and literature?

Memory is the indispensable requisite to all progress in learning. It is the fixing solution by which the results of study are made a permanent image on the photographic plate of the mind. The question should be not what part, but how? The memory is just what you make it. It may be merely a verbal memory, a kind for which the teacher ought to have no use. It may be a memory based on logical associations. This is the kind which the teacher should try to cultivate. Psychologists tell us that a single idea, unassociated with any other, could not exist in the mind. In order to be of value and in order to have ideas subject to recollection they must be bound together in logical associations—the relations of cause and effect, of resemblance, and of contrast. Associations of contiguity in time and place are of great value, but they are not so strong as those first mentioned.

In the study of geography the memory should be based on the cultivation of the imagination and the relations of cause and effect in topography and climate. Further associations should be based on the resemblances and contrasts in the various portions of the earth's surface and associations with historical events.

History is of little value as a study unless the logical sequence of events finds a place in the mind. Grouping events according to periods of time and strengthening the associations between events and places are valuable aids to the memory. Points of resemblance and contrast in historic characters, their principles and motives and in events, form strong links in the chain.

Literature is essentially a study of human character, with its

environment of place and incident, with its emotions and its motives, and it gives us the best of opportunities for forming those associations of cause and effect, analogy and contrast, which are necessary to mind training. The test of progress in literature is not to memorize the whole, for that is often impossible or useless; nor is it to memorize certain portions of the work which may be repeated more or less accurately in answer to questions. But the real test is to give in a condensed form a connected account of the subject, including its essential parts; and the training necessary alike to understanding and to retention consists in forming those associations of cause and effect, or sequence.

The greater the number of these associations by which you attach the new subjects to things already in the mind the stronger and more useful will be the memory. Memory, as I understand it, is the result of performing real educative acts, and, if care is taken to keep the subject-matter within the limits of the child's understanding and not to overtax the mind, the memory, as a result of these educative processes, will require no further consideration.—*George H. Putnam, Kansas.*

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No. 45.—Should language be taken into consideration in marking examination papers in such studies as geography, history, and arithmetic; and if so, to what extent?

Yes; but it should always have consideration next to thought. I would even give a paper, marked by crudities in language but possessing evidences of thought, a higher grade than one that adhered to the language of the text-book. The latter is likely to be little more than the product of an act of memory. A test of what the pupil really knows is something much broader than a test of memory; indeed, memory per se sometimes plays a very subordinate part in making up the sum total. Of course, no scheme of education is complete that does not take cognizance of memory training. There is at present, perhaps, too much decrying of this faculty of the mind, too much disposition to thrust it aside as an agency in education, a disposition due admittedly to the abuse of memory. It is the part of the teacher to see that the exercise of this faculty be always accompanied by intelligence. Accordingly, in marking a paper, the employment of the language of the text-book may be passed over lightly where the circumstances go to show that the memo-

rizing is accompanied by intelligence. But a paper embodying the language of the pupil, if correct in phraseology and faithful in the statement of facts, is deserving of the highest mark. I would not be severe in marking errors in phraseology where the language is the pupil's, not as severe as where the pupil is trying to follow the language of the book and trips up. Due credit should always be given to an answer that shows that the pupil has an idea, and in no case should one be marked zero unless it is incorrect in fact or its wording is so erroneous as to make nonsense. Arithmetic requires more care as to statement than the other two studies mentioned. A mere grammatical error need not receive much attention, but where a statement in a problem vitiates the process, or where there is a different term in the answer from what is required by the question, the error should be severely marked. For instance, when a problem involves men, days, and dollars, a pupil may place dollars in the answer where he should have men. Such an error, whether due to carelessness or ignorance, can not be passed over lightly. It is, however, impossible to follow an invariable set of rules in marking examination papers and always do justice to the pupil. Much depends upon circumstances, and the examiner must be left to exercise his judgment.—*J. W. Blattner, Texas.*

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No. 46.—What proportion of time, if any, should be allowed for study in the schoolroom?

Lessons should be prepared during evening study hour and no time allowed for that purpose in the schoolroom.

Study, so called, in the case of young pupils means simply committing sentences to memory, and this should be discouraged.—*Miss Adelaide A. Hendershot.*

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No. 47.—What do you consider the most profitable kind of busy work for those pupils who finish their allotted tasks before the duller ones in grades between third and seventh?

Reading.—*Thomas S. McAloney, Alabama.*

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No. 48.—Do you favor night study for beginning pupils? If so, what work would you prepare for them?

No; I do not favor night study hour for beginning pupils. Every educator knows that a beginner can not study, and his presence in the study hall is not only an injury to himself, but

also to the more advanced pupils. Not being able to study, he naturally falls into habits of indolence and receives an erroneous idea of study hour, one which is difficult to dispel at a later period. It is almost impossible for the person on study duty to keep a class of beginners perfectly quiet, and as a consequence the attention of the more advanced pupils is distracted and they are unable to accomplish their work as they should. It is possible, however, to have the beginners in a separate room, under the care of some person who will carry on the same exercises as are carried on in the class room during day; but I do not consider this practicable.—*Thomas McAloney, Alabama.*

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No. 49.—Upon what does a good memory chiefly depend?

A good memory depends chiefly upon, first, native endowment; second, use.—*G. O. Fay, Hartford.*

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No. 50.—Is the excitement of forced enthusiasm injurious to the retentive faculties?

Enthusiasm, natural, excited, or forced, is favorable to memory, reasoning, and imagination. The more the better, up to the safety limit for explosion.—*G. O. Fay, Hartford.*

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No. 51.—To what extent is it desirable to portion off in advance the work to be covered by a class in a given time?

The teacher should have in his own mind a definite goal which he wishes the class to attain. In the methods he employs and the number of pages or chapters he covers, he should be allowed great latitude, if a teacher of experience.—*Rosa R. Harris, Maryland.*

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No. 52.—How many hours do you consider a day's work for a child in our schools as ordinarily conducted, including the literary and mechanical departments?

Children under 12 years of age ought not to be kept at school work more than 5 hours a day. The rest of the time, aside from that given to sleep and meals, should be spent in play, and as much of it as possible in the open air. For pupils 15 years of age or over, 5 hours of school, 1 hour of evening study, and 3 hours of mechanical work are not too much. Whether a child from 12 to 15 should have work or play outside of his 5 hours of school should depend upon his physical condition.—*Job Williams, Hartford.*

No. 53.—Under what conditions can a double session be profitably conducted?

As I can not answer this question from experience, my opinion is worth but little.

If circumstances compel a double session, I would divide the classes of my school into four sections, say A, B, C, and D.

Let the primary classes be designated as Section A, and have them remain in school all morning from 8 to 12.30, with 20 minutes recess.

Section B, in school from 8 to 10.30; in shops from 10.30 to 12.30, and back in school from 2 to 4.30.

Section C, in shops from 8 to 10.30; in school from 10.30 to 12.30 and from 2 to 4.30.

Section D, in school from 8 to 12.30, and in shops from 2 to 4.30.

This schedule for Sections B, C, and D should not continue throughout the session, but should alternate so as to allow one section in school all the morning every third week, and in the shops in the afternoon. This would relieve the teachers of the disadvantages of a divided session throughout the entire term, and the change would also benefit the pupils. The only advantage to a school by such an arrangement, would be that the instructors of the trades would have only one-third as many pupils to instruct in the morning session and two-thirds for the afternoon, whereas under the single-session plan the entire number taught each trade would be under the instructor of that trade at the same time.

But unless a very crowded condition of the shops demanded it, I should always prefer a single session.—*Augustus Rogers, Kentucky.*

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No. 54.—What should be the length of a day's session in the schoolroom?

By reference to the statistical tables in the "American Annals" for 1876, I find that in that year the longest session was 7½ hours, at the Illinois school. The next longest session was 6 hours, and was the session adopted in 8 institutions. The shortest day's session was 4½ hours, and the one used in 3 institutions. Five and one-half hours constituted a day's session in 6 institutions, while 5 hours represented a school day in 20 other institutions.

From the same source, but 20 years later, I find that the Texas school has the longest school day, having a session of 8½ hours,

the Wisconsin school coming second with 7½ hours to the day. The shortest session consists of 4¾ hours, and is the school day of 5 schools. Twenty-three schools are put down as having a 5-hour school day. I have briefly shown what was the day's session 20 years ago and what is a day's session to-day. Twenty years ago 5 hours seems to have been generally recognized as constituting a school day, more or less than this having been the exception. During the intervening 20 years there does not seem to have been any marked change in the length of school days, 5 hours being now, as then, the rule, more or less the exception. I think that we can fairly conclude that on the whole 5 hours is a proper day's session.

To shorten this period, with the size of classes as at present constituted in most of our schools, would certainly not be a desirable thing to do; and to lengthen the period would, in my opinion, be equally undesirable, for it must be borne in mind that the actual time spent in the class room by both teacher and pupil does not represent the time devoted to school work. Pupils (excepting the youngest) are at study from one to two hours in the evening, and this time should be taken into consideration in determining the length of a day's session.

The class room does not represent the sum total of the teacher's duties or work. Chapel lectures, supervision during study hours, teachers' meetings, holiday entertainments, etc., all make demands on the teacher's time. From one to three hours daily should be devoted by every teacher to a careful review of the day's work and to arranging the work for the coming day. When this is honestly and conscientiously done, and the extra duties previously enumerated attended to, a 5-hour session is all that ought to be required of either teacher or pupil.—*D. F. Bangs, North Dakota.*

No. 55.—What is the most desirable single quality that a teacher may possess?

Apt to teach.—*John E. Ray, North Carolina.*

No. 56.—Should not primary teachers have ability and experience equal to that possessed by teachers of more advanced classes and hence receive equal compensation?

Ability, natural or acquired, is the first requisite in a teacher, and to this must be added experience. This is needed in the primary classes no less than in the more advanced. A primary class should never be put under an inexperienced teacher. The

question is not how much a teacher knows, but whether she can meet the children on their own plane, draw them out, and lead them up higher. This can be tested only by experience. It is wiser to let the new teacher prove her ability in a class of two or three years' standing which has been well trained.

Good teachers when found should be encouraged by liberal compensation. Primary teachers should be required to pass the same examination as candidates for the intermediate and grammar grades and should receive equal compensation if they do satisfactory work.

The real test is the work of the school room. Having the necessary acquirements to fill a place in either of these grades, the teacher should be assigned to the one for which she shows the most aptitude.—*C. W. Ely, Maryland.*

No. 57.—Do not the terms "immature" and "in a state of retarded development" correctly describe the mental condition of the deaf, excepting those who are following professional pursuits?

No; they perhaps correctly describe the mental condition of uneducated deaf children or those who are only partially educated.—*F. D. Clarke, Michigan.*

No. 58.—Is it true that some teachers would rather fail with their own methods than to succeed with the methods of another?

It may be possible that here and there among the large number of teachers of the deaf there may be one or two who are so narrow-minded. My own experience with teachers is that they are very willing to study carefully any other method, and if it offers a promise of better results to try it.—*F. D. Clarke, Michigan.*

No. 59.—Is experience all that is necessary for a teacher to have? Is experience the most important thing for a teacher to have?

I should say that the most important thing for a teacher to have is a good mind, and next to this, possibly even ranking before it, a willing spirit. Without these two all the experience in the world amounts to nothing whatever. Some teachers get more experience in a year than others do in five. Still, with a proper spirit and proper mental ability, the more experienced a teacher is as a rule the better that teacher is.—*F. D. Clarke, Michigan.*

No. 60.—Are deaf teachers to be preferred to hearing teachers with any classes?

It is utterly impossible to put teachers in classes and say one class of teachers is good for a certain work and another for a different one. I have some hearing teachers who, I think, do as well with young pupils as any deaf teachers. I have some deaf teachers who, I think, might possibly do better work. As a rule, however, I find that the deaf teacher is apt to take more interest in her children and give them more of her time out of school, and consequently they do better. I do not, however, think that hearing or not hearing has much to do with a teacher's efficiency, and in this school it has nothing whatever to do with the question of fixing salaries.—*F. D. Clarke, Michigan.*

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No. 61.—If it is true that children learn best through actual imitation and practice, should we not teach them more of that with which they are in sympathetic touch?

Whether this be true or not it is certainly true that we should teach children more of that with which they are in sympathetic touch than we do. The "born teacher" has an almost instinctive knowledge of the lines of sympathetic interest affecting the children. She utilizes them to the utmost. But there are great differences in "born teachers." The best of "born teachers" do not simply utilize the interest of children, but they know how to create interest. The creation of interest is an art, but its methods are natural. The whims and caprices of children throw light upon their intellectual condition and upon their mental necessities. Interest in a wrong direction or to an undue extent is not crushed out by the wise teacher, but through skillful suggestion a wholesomer interest is aroused. The most arid subject and most repulsive tasks when presented at a proper time and in a proper way may become delightful.—*J. C. Gordon, Illinois.*

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No. 62.—At what age should deaf children be received into our institutions?

If the child is surrounded by proper influences at home it may advantageously remain there till it is 8 years old. This is especially true of those schools where there is no convenience for the separation of the younger children from the older. In schools where the term of years is limited by law to, say, 10

years, the pupil will get much more between the years 8 and 18 than between 6 and 16.

If, however, the school is provided with a separate primary department, where the little ones can be properly shielded from the roughness of the older pupils; if the parents are wicked or too indulgent; if the child is well developed for its age, and if, as is the case in Colorado, there is no term prescribed by law except that of the public schools (6 to 21), it might be an advantage to have the child begin early, especially if care is taken to prevent it from falling into lazy habits.—*D. C. Dudley, Colorado.*

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No. 63.—Should the study of physics be in the curriculum of our schools?

I know of no elementary text-book in physics, the mastery of which should be required inside of the regular or ordinary course of schools for the deaf, but in every school having advanced classes it is very desirable to teach in as practical a manner as possible some of the elementary principles, illustrating them mainly by carefully selected experiments to be made by the pupils themselves. In other words, the laboratory method should be applied strictly, under the guidance of an instructor competent to lead his pupils to note the principle involved in the experiment.

While the experimental method is a vast improvement upon mere text-book teaching, and experiments made by the pupils themselves are infinitely more valuable than experiments made for them by the teacher, no teacher should be deceived into the complacent belief that because a pupil has performed an experiment he has gotten hold of the principle involved in it, or of the ideas that are uppermost in the mind of the instructor.

For a practical course, a selection of from 25 to 40 per cent of the experiments laid down in the course of instruction recommended for applicants for admission to Harvard would be as much as bright pupils could be expected to accomplish in the last year in a school for the deaf. Bright pupils take a deep interest in this kind of laboratory work, and their notes upon the work done by themselves can be made the most profitable kind of practice in the use of the English language.

With the above explanation I answer the question most emphatically in the affirmative.—*J. C. Gordon, Illinois.*

No. 64.—Please state your opinion of the comment given on the "ratio" and Grube methods in the Child's Study Monthly of February, 1898, page 501.

The comment referred to is by Dr. E. E. White. It is in spirit and tone a severe arraignment of modern methods of arithmetic teaching. Dr. White condemns the early forcing of abstract relations and logical processes upon young children as "a wide and serious error in primary instruction." He says:

> The forcing of young children to do prematurely what they ought not to do until they are older results in arrested development, and whether this is due to exhausted power or burnt-out interest, the result is always fatal to future progress. The colt that is overspeeded and overtrained when 2 years old breaks no record at 6. The same is true in the training of young children. There is such a thing as too much training in primary grades; an overdevelopment of the reason. A little child may be developed into a dullard. More natural growth and less forced development would be a blessing to thousands of young children. It is not what the child can do at 6 or 7 years of age that settles questions of primary training, but what he ought to do, i. e., what is best for him to do at this stage of school progress.

Now, all this is very true and it could scarcely be more forcefully put, but it is my opinion that Dr. White exaggerates dangers and misreads the tendencies of the times. There are always corrective forces at work, and no "wide and serious error in instruction" can long survive their operation. For my own part, I like new methods. They shake us out of our ruts and set us to thinking upon new lines. Every new method brings to our attention some new principle, and, though the method may be short-lived, the principle will persist and serve to modify methods for all time. The "ratio" method is such a method. It presents us a new principle, and a principle that has been, I may say, quite generally overlooked by teachers of the deaf. A study of this method will, I am sure, profit us all, even if we may not practice it upon the lines and to the limits that its enthusiastic advocates lay down. I fully concur with Dr. White's criticism of the Grube method, though I confess to having received much help and inspiration from the method in my earlier years of teaching. After reference to the meager results of the mental arithmetic drills of forty years ago, Dr. White disposes of the Grube method in these words:

> The Grube method, though not so great a pedagogical sinner as the mental-arithmetic method, has had a similar history. What superintendent or teacher has found in the fifth or sixth school year arithmetical skill or power that could be traced back to the Grube grind in the first and second school years? Who now regrets to see the method retiring from the primary schools which it has so long possessed?

I may answer the last question; certainly no teacher of deaf children regrets its retirement, though many of us have profited by its suggestiveness.—*F. W. Booth, Pennsylvania.*

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No. 65.—Would you advise marking pupils on daily recitations or weekly reviews?

If pupils are to be marked at all, mark on the daily recitations, because that plan is more nearly just than any other. It is well to mark also the weekly reviews, as this secures a record of the pupil's ability to generalize. For reports and promotions an average of the two is desirable.—*Miss Anna Morse, Jacksonville, Ill.*

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No. 66.—How may the child mind be disciplined to select single objects of thought?

By presenting the single object very distinctly and also attractively, and by attempting to hold the attention to it for a short time only.—*Miss Anna Morse, Jacksonville, Ill.*

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No. 67.—Do you favor early marriages for the deaf?

My wife was 20 years of age and I was 23 when we were married, on the 15th of July, 1845. From my personal experience I must give my testimony in favor of early marriages. My observations of the conditions of many other couples who have married early in life have led me to believe that they have generally been specially happy. I see no reason why deaf-mutes, under ordinarily favorable circumstances, should not enter into the relations of holy matrimony early in life.

I have joined in marriage upward of 200 couples of deaf-mutes. Most of them have been young people. The great majority have made happy homes for themselves and their children. While deafness is hereditary in some families, the great majority of the children of the deaf can hear and speak.

In thus favoring early marriages among the deaf on general principles, I must advise them to be reasonable and to exercise good judgment as to the characters of those whom they propose to take for better or for worse to the end of their earthly lives, and of their ability to maintain their homes.

I say, then, godspeed to the deaf who have formed good characters and thrifty habits if they desire to enter early the married life. I wish they could all take this serious step as followers of our Lord and Savior Jesus Christ.—*Rev. Thomas Gallaudet, New York.*

No. 68.—What test do you apply to discover if your pupils understand all you teach them?

Tests are critical, objective, and argumentative. To be judiciously applied, in any case, they must be varied to suit the individual, the occasion, and the object sought. If seeking to secure a comprehension of principles, I appeal to the understanding and apply the test of common sense—that is to say, generalization. If seeking to secure an apprehension of facts, I appeal to the memory and apply the test of repetition—frequent, varied, and unexpected.—*Isaac B. Gardiner, Arkansas.*

NECROLOGICAL NOTICES.

NECROLOGICAL NOTICES.

GARDINER GREENE HUBBARD.

Gardiner Greene Hubbard deserves to be remembered among the eminent benefactors of the deaf in America.

His interest in the deaf having been excited by the loss of hearing of a daughter in early childhood, Mr. Hubbard began in 1862 to acquaint himself with the different methods in which the deaf were then educated. At that time his daughter, now widely known as Mrs. Alexander Graham Bell, was four years old, and had gained such command of spoken language as is usual with children of that age.

Her father felt that the preservation of her speech would be a great boon, and was soon convinced that this could be secured to her.

But Mr. Hubbard's interest in the education of the deaf was not limited to his own child. Satisfied by her success in speech that those stricken as she was could gain similar advantages, he took measures, with the cooperation of others, to induce legislative action in Massachusetts favorable to the establishment of a school for the deaf in that State.

It was largely through his instrumentality that the private school of Miss Harriet B. Rogers, started in Chelmsford in 1865, was merged, in 1867, in the Clarke Institution at Northampton, and that the latter, liberally endowed by private benefactions, was chartered and recognized as a State school.

Mr. Hubbard became the first president of the board of directors of the Clarke Institution, and held that office for ten years.

No man in America has stood more earnestly for the cause of teaching the deaf to speak than Mr. Hubbard, and his influence has had much to do with the present general acceptance of this feature by the older schools of the country, in which for many years it had no place.

More sanguine than the majority of the teachers of the deaf as to the proportion of deaf children that may be successfully educated under the oral method, Mr. Hubbard never laid himself open to the charge of unreasonable partisanship, but held

the respect of all as a sincere promoter of what he believed to be the methods most helpful to the deaf as a class.

Attending many gatherings of instructors of the deaf, Mr. Hubbard won the warm regard of every member of our profession who had the pleasure of meeting him or hearing him speak, and those who were brought into more intimate relations with him, through service on committees of which he was a member, came to feel for him a degree of veneration and affection that makes his death a personal grief to them.

Mr. Hubbard died at Washington December 11, 1897, in the seventy-sixth year of his age. His pastor, Rev. Teunis S. Hamlin, D. D., expressed the feelings of his many friends when he said at his funeral, "Our capital city has lost its first citizen in civil life."—*Edward M. Gallaudet.*

MARY ROSE TOTTEN.

Eminent age is in itself venerable, but when it is united with eminent goodness and eminent services in a good cause it constrains our highest tribute of admiration and reverence. An aged and excellent Christian, who for many generations has faithfully performed her duties, has befriended her race, and in her time did much to rouse public interest in the cause of the education of the deaf, deserves our gratitude; and when death removes her to join that cloud of heavenly witnesses and examples which surround us we feel that her removal is appropriate and that her example should be studied.

Among the first four pupils of the New York Institution for the Instruction of the Deaf and Dumb, when it opened in 1818, was Mary E. Rose. She was born in New York City in 1808, being deaf from birth, and had the advantage, rather rare at that time, of receiving early instruction, entering the institution as a pay pupil at the age of 9. She came of a prominent New York family, which, having met with financial reverses, subsequently removed to Albany. She then became a State pupil from the third senate district.

In 1822 she was selected as an assistant teacher, bearing the distinction of being one of the two first deaf teachers employed at the New York Institution, the other being John H. Gazlay, who was appointed at the same time. Of her selection the records of the institution state:

> She is a very promising young woman, and the directors find her highly useful in the institution as an assistant teacher, while at the same time she is acquiring information as a pupil.

At this time Miss Rose was quite young, but already gave promise of the great personal beauty for which she was subsequently noted, and traces of which remained with her even in extreme old age. She was, moreover, very intelligent, and though a deaf-mute from birth she could express her thoughts in well-chosen language.

In the dual position of teacher-pupil she remained until 1826, when she resigned to become the wife of Mr. Clinton Mitchell, a hearing gentleman, the nephew of Dr. Mitchell, at that time president of the board of directors of the institution. Upon the death of Mr. Mitchell she was appointed assistant matron at the institution.

In July, 1844, she became the wife of Mr. Nathan M. Totten, a graduate and for some years a teacher of the New York Institution, and with her husband went to the North Carolina Institution, where Mr. Totten had an engagement as teacher. Subsequently, in August, 1847, Mr. Totten transferred his services to the Illinois Institution, with which he continued until his death. In each of these institutions Mrs. Totten, during her husband's connection with it, performed, with intelligence, energy, and womanly tact, the duties of matron. By this latter marriage Mrs. Totten had several children, two of whom still survive, in Illinois, and have families.

In 1853 she returned to the New York institution as a temporary teacher, a position she held till the close of July, 1854. The next year she was reappointed assistant matron, and continued in that position until September, 1871, when she retired with the love and respect of all, after nearly twenty years' service at the institution in a position where she exhibited intelligence, kindness, and administrative ability. In his report for 1871 Dr. Peet thus feelingly comments on her remarkable career:

I have to record the retirement, on the 1st of September, of Mrs. Mary E. Totten, the principal assistant matron, who was specially in charge of the girls.

One of the first four pupils with whom the institution was opened in May, 1818, she was conspicuous in its early history, and her bright childhood is still remembered with interest by some of the few persons in New York who can recall the events of fifty years ago. From being one of the pupils whose performances were the most effective in winning public interest and favor to the cause of the deaf-mute instruction, she became a teacher; but the beautiful and intelligent Miss Rose could not, more than her hearing sisters in like circumstances, be left to the quiet of an unpretending, useful vocation. She was soon wooed and won (one of the earliest instances in our city of the marriage of a deaf mute) by a hearing

gentleman, for some years a teacher of deaf mutes, and a nephew of the distinguished scholar and philanthropist, Samuel Mitchell, D. D., then president of the board of direction.

As Mrs. Mitchell she became, after the death of her husband, assistant matron of the institution, in which capacity she was for years signally useful.

Forming a second union with one of the teachers, a deaf gentleman, she changed her name again, and, as Mrs. Totten, was successively assistant matron in the North Carolina, and matron in the Illinois institution, while her husband was teacher in the same institutions.

Left a second time a widow, more than twenty years, she returned to visit her family connections in the East, and was soon after persuaded to resume her connection with this institution, at first as a teacher and afterwards as assistant matron, in which she gave us sixteen consecutive years of faithful and very efficient service.

Upon her final retirement from the institution she resided several years in its immediate neighborhood, having, through the efforts of Dr. Peet, secured a competence sufficient to exempt her from care and permit her declining years to be happy and contented. As she grew in years her friends arranged for her comfort at the Gallaudet Home, where she passed her closing days in peaceful serenity.

Her last public appearance at the institution was on the occasion of the celebration of the seventy-fifth anniversary. She was then 84 years old, but seemed much younger. Her end, a peaceful one, came on Wednesday, April 21, 1897; surrounded by kind, loving faces, her spirit took its flight to its final home. Truly, hers was a remarkable career; a long, beautiful and useful life, and a history that is a credit to the New York institution, of which she was the last survival of its original pupils.—*Thomas F. Fox.*

OLIVER DUDLEY COOKE.

Mr. Oliver Dudley Cooke was born in 1822. He was a graduate of Trinity College, Hartford, and from 1845 to 1853 he occupied a position as teacher in the Hartford School for the Deaf.

After resigning that position he taught in West Virginia, and also in our own institution. In this latter he became the head teacher, charged with the instruction of the high class.

He took an active part in the war between the North and South, holding the rank of major in the Confederate army. He left the profession and became a lawyer of note. His compilation of the statutes of West Virginia gave him wide reputa-

tion, and he was appointed deputy attorney-general of West Virginia, which office he held from 1878 until his death.

He was a fine, handsome man—somewhat headstrong, perhaps, but generous to a fault. He is said by his contemporaries to have been a most excellent teacher, and one who possessed the universal love and respect of his pupils.

In teaching the deaf he believed in the use of spelling exclusively, and may be considered the father of manual spelling. He prepared a course of instruction based upon this idea, and this fact should be generally known, in order that proper honor should be paid to his memory for this contribution to the cause of deaf-mute education. He died of pneumonia on the 23d of March, 1895, in the seventy-third year of his age.—*From the Deaf Mutes' Journal.*

MRS. ELIZABETH V. CLERC-BEERS.

The writer, in preparing this memorial of his lifelong and beloved friend, desires to acknowledge the kindness of Dr. Job Williams, principal of the American School for the Deaf, at Hartford, Conn., in obtaining for him the necessary information as to dates, facts, etc. Mrs. Beers was born in Hartford on the 25th of March, 1820, was married to Mr. George Beers May 13, 1845, and died May 2, 1897. She was a teacher from 1859 to 1864 in the Hartford school, in which her distinguished father, Mr. Laurent Clerc, was so prominent.

Mrs. Beers leaves two children, Prof. Henry A. Beers, of Yale College, and Mrs. Heaton, of Hartford. Her brother, the Rev. Francis J. Clerc, D. D., is the only surviving member of the family of Mr. and Mrs. Laurent Clerc.

Mrs. Beers was a woman of remarkable intelligence, culture, and vivacity, and much beloved by a large circle of admiring friends. Her devotion to her aged parents during the latter days of their earthly pilgrimage was a striking feature of her Christian character. Her death was peaceful, and we take comfort in the belief that she is at rest in paradise.—*Thomas Gallaudet.*

THOMAS BURNSIDE.

Mr. Thomas Burnside, for thirty-five years a teacher in the Pennsylvania Institution for the Deaf and Dumb, died September 12, 1895, of paralysis at his residence in Philadelphia. Mr. Burnside was a man of most kindly disposition and of high

and noble impulses. He was honest, sincere, and steadfast in all his beliefs. He was a generous, sociable neighbor and a good and worthy citizen. As a teacher he was systematic and painstaking. He was a good disciplinarian. He insisted on the rigid observance of rules and regulations, and always maintained a high degree of order and decorum in his class room. He was a believer in the older methods of teaching. He found it difficult to grasp the spirit and intent of modern methods. He was a clear and forceful sign maker, and took pleasure in conveying his ideas through the language of signs. As a worker he was indefatigable, both in and out of school. Idleness he despised and detested. He devoted his life, his talents, his strength to the work of teaching the deaf, and in his death they lost a patient, sincere, devoted friend and the community an honorable and upright citizen.—*A. L. E. Crouter.*

WILLIAM GURNEY JENKINS.

William Gurney Jenkins, a teacher in the American School for the Deaf at Hartford, Conn., died of pneumonia March 3, 1896, in the forty-eighth year of his age. He was born August 20, 1848, at Dowlai, a suburb of Merthyr Tydvil, in Wales. His childhood and youth were spent at Witton Park, near Bishop Auckland, in the county of Durham, England. In his twenty-first year, the family removing to Cleveland, Ohio, he entered Western Reserve College and graduated with salutatory honors in 1874. Two years of subsequent theological studies at Lane Seminary, Ohio, were interrupted by the outbreak of serious bronchial difficulties of a chronic character. Forced to abandon a profession requiring public speaking, he accepted the alternative position of Christian usefulness as teacher in the institution for the deaf at Little Rock, Ark., and seven months later, upon the death of the superintendent, was himself appointed to that office. After two years of service he accepted a teacher's position in the Philadelphia institution, holding the same until his removal to the American Asylum at Hartford in 1885, where the remainder of his life was spent. He had married in 1876, and at his death there were left to mourn his taking away in the high noon of his strength a wife and four sons, the last posthumous, and named, for his father, William Gurney. A daughter had died the previous year.

Mr. Jenkins, as a man, was eminently cheerful, social, attractive, and exemplary. He was always ready to lend a hand

up to his strength and beyond it, whether the call was to assist in a game or to fill a vacant pulpit. Professionally, as a teacher, his quick intelligence, earnest interest, and glowing sympathy habitually evoked in a high degree the attention, interest, and affection of his pupils. In his class exercises he poured a flood of speech, spelling, signs, and writing, all selected and blended with inimitable dexterity and eclecticism. He was a frequent and acceptable contributor to the literature of deaf-mute society and education, from the familiar newspaper to the scholarly quarterly.

He composed two valuable text-books—Talks and Stories, and Words and Phrases. His reputation and standing grew steadily and rapidly to the end of his career. He was respected and trusted by his professional associates. He had come to be recognized by the educated deaf of the country as a ready and resolute champion of their peculiar interests. In the permanent records of the country's literature, as well as in its grateful memory, his name and fame are distinctly and indelibly written.—*Gilbert O. Fay.*

PAUL BINNER.

Paul Binner, of Milwaukee, who died at Rogers Park, Ill., Tuesday, January 7, 1897, was for many years a prominent teacher of the deaf. As the efficient and respected principal of the Milwaukee Day School for the Deaf he outlined and carried on a course of oral instruction for the deaf with much success.

Amply prepared by his already extensive experience with stammering and imperfections of speech, his success with the deaf was at once assured.

With his assuming control, the school has steadily grown in size and efficiency till it is regarded as preeminently among the best day schools for the deaf in the country.

Besides Mr. Binner's work with the deaf he has also published several books suitable for the schoolroom. He also published a chart of vocal exercises, which has greatly facilitated the work of teachers in the education of the deaf.

Mr. Binner spent some time in Europe making a thorough study of the methods of instruction of the deaf in the Old World, and upon his return to the United States carried out several of the ideas which he thought helpful to the deaf, and which at that time were not in vogue here.

His active connection with school work ended in the spring of 1895, and long before that his physical condition and health were sadly impaired.

Deeply interested in the advancement of speech to the deaf, all who have come in contact with him have felt the influence of the honest sincerity and unfaltering confidence with which he carried on the arduous work in which he was engaged.

Mr. Binner took a prominent part in Wisconsin's war record, serving in the Thirty-fifth Wisconsin, having enlisted as a private and being mustered out as a lieutenant. He was an influential member of the Grand Army of the Republic, and for many years prior to his identification with the education of the deaf was a teacher of German in the city schools of Milwaukee.

He slumbers in the bosom of the land he loved, and we all join with those who knew him best in saying that his death is a loss to the profession and to the State.—*Henry B. Plunkett.*

DR. J. L. CARTER.

Dr. J. L. Carter was born in Kemper County, Miss., September 3, 1834. He graduated from the famed University of Virginia and the Jefferson Medical College, of Philadelphia, Pa. He enlisted in the Confederate army and served through the civil war, and also was specially engaged in the service as a surgeon. At the close of the war he located in Jackson, Miss., where he became the first superintendent of the insane asylum for a time, and afterwards he was appointed superintendent of the school for the deaf and held his office from 1871 to 1876. He also held several positions of importance and honor in the city of Jackson and then was a city health officer during the big spread of the yellow fever and cholera. In 1876 he resigned his office and moved to Austin, Tex., to live permanently. He was principal of the educational department of the Texas school for the deaf for one year and then went to Dallas to locate and then served in the city as a health officer for eight years. He resided there till he died in 1897. He was married to Miss L. Lewis, of New Orleans, La., whom he left to mourn for him. He was a man of integrity in all his business. He was a good, respected, and progressive citizen of the community in which he resided.—*Lars M. Larson.*

LAWRENCE W. SAUNDERS.

On the evening of Christmas day, 1896, as the pupils of the Mississippi school for the deaf were in eager expectancy for their Christmas-tree festivities, at which one of their loved

teachers, Mr. L. W. Saunders, was to appear as Santa Claus, word came that Mr. Saunders had been accidentally shot.

Superintendent J. R. Dobyns, describing the startling tragedy in the Deaf-Mute Voice, says:

In less time than it takes to write this sentence I was at his side. In the darkness of the night I made the letter D on his chin. Embracing me in his arms and pressing me to his wounded bosom was his sign of recognition, and I felt I could hear him say, "I know who you are." Pillowing his head in one hand and stroking his face with the other I placed my finger over his lips; he understood the sign and ceased to struggle, holding to my hand. I waited a few seconds; help came and we placed him on the bed in the lighted room.

While the inner man was strong, "the flesh was weak," and I could see death written in the face. I could not help asking him, "Do you put your trust in Jesus Christ still?" Though his hands were gloved he spelled as distinctly as I ever saw the words "Yes, I do."

By this time the loved ones were around him. In the full possession of his bright mind and with the happy face that never forsook him, he said to them, "I trust in Jesus Christ and it is all right." He bade each one good-by, and in less than twenty minutes from the time he was strong and well that beautiful spirit went up to God who gave it.

At the funeral Mr. Dobyns spoke as follows:

In this sudden and strange providence the deaf of Mississippi feel as if they had lost something and do not know just what it is. I feel as if my right arm was broken. The institution authorities know the place of Lawrence Saunders can never be filled; some person can be chosen for the position.

Mr. Saunders lived a life of which any man ought to be proud. He entered school when 14 years old, unable to read or write. In exactly three years from that month he was appointed a teacher.

During the past few weeks biographical sketches of the prominent deaf teachers of the United States and Canada have been published. Many have become distinguished, but I have challenged North America with the record made by Mr. Saunders, and in my estimation it stands without a parallel.

Nobody can estimate the happy effects of that man's life. Cheerful, honest, faithful, and true, he has been a constant benediction to the deaf and a blessing to all his friends. Hundreds of deaf people all over the State have grown from boyhood and girlhood to young manhood and womanhood under the gentle and loving instructions of our friend, and are reflecting his shining example in many happy homes to-day. Just as the waves, when a stone is dropped on the face of the sleeping waters, extend and extend and extend till they break upon the shore, so the Christian influence of Mr. Saunders's life has grown and grown and grown till we can see the swelling billows away out on the ocean of eternity.

The record fails to show that any other man, living or dead, has served Mississippi as long as Mr. Saunders. Thirty-nine long years of the very best of his life have been spent for her, and she now mourns his death.

Being a native of Mississippi, educated in her institution, having devoted his life to her moral and Christian interest, and having won for

her and himself so much honor, do you not think, if she builds a million dollar capitol, that the name of L. W. Saunders ought to be cut in the corner stone of that beautiful temple with the names of such men as Davis, Lamar, and Prentiss? I do.

Whether this wish shall ever be gratified or not, I do not know and he does not care. But one thing I do know and in which he rejoices, is, the name of Lawrence Washington Saunders has been written in eternal letters in the Lamb's book of life, and he is now and will be when the grandest monument that shall ever have been built on this earth has crumbled into dust, enjoying the full fruition of a hope I saw him express two weeks ago at the close of one of his beautiful Sunday morning prayers, when, lifting his eyes heavenward, he said, not in the silvery voice of the tongue which God hears, but in the very poetry of signs which God understands, "I shall be satisfied when I awake with Thy likeness."

MISS ELIZABETH B. KNIGHT.

Miss Elizabeth B. Knight died at her home in Germantown, Philadelphia, September 24, 1896. Miss Knight had been a teacher in the Pennsylvania Institution for two years previous to her death, and in that time had demonstrated the possession of qualities of mind and heart that gave promise of bringing to her eventually the highest success in her chosen work. Appropriate resolutions by her associates in the school were passed and published.—*F. W. Booth.*

MISS KATHLEEN GAYLOR.

Miss Kathleen Gaylor, of Lewistown, Pa., died at the Methodist Hospital in Philadelphia January 20, 1897. Three years' experience in teaching had been sufficient to bring Miss Gaylor to the front rank among teachers of the deaf, and hence her loss was the more keenly felt by the school in which she labored. Miss Gaylor began and ended her work in the Mount Airy School.—*F. W. Booth.*

MISS AMY STONE.

Miss Amy Stone died at the Howard Hospital in Philadelphia November 1, 1897. Miss Stone taught three years in the advanced department in the Philadelphia Institution, and in that time fully proved her value as a teacher. She was of a peculiarly winning disposition, and was highly esteemed by officers, teachers, and pupils alike. Miss Stone's work with the deaf was limited to her connection with the Pennsylvania school.—*F. W. Booth.*

MRS. MARY H. FISKE.

Mrs. Mary Hunter Fiske was born in Ripon, Wis., June 14, 1852, and died in Delavan, Wis., December 21, 1895.

After completing her studies in the schools of her native place, she entered Ripon College. Later she took a course in the Normal School at Oshkosh, Wis., where she thoroughly prepared herself for the teacher's profession.

After teaching for some time in the public schools of Ripon, she was offered a place in the School for the Deaf at Delavan by William H. De Motte, LL. D., then superintendent, in the winter of 1878. In the first month of the new year she began her new duties, and continued to discharge them with intelligence and fidelity until November, 1892, when failing health compelled her to resign her position and seek the recuperating effects of a milder climate. With her husband, Mr. Edgar D. Fiske, then assistant steward of the school, to whom she had been united in marriage August 5, 1885, she went to New Mexico.

The two remaining years of her existence were simply a struggle against that dread disease, consumption.

Mrs. Fiske was of a quiet, undemonstrative character, and a faithful member of the First Baptist Church of Delavan, where for several years she conducted a Sabbath school class of deaf people.

Of the funeral services, which took place near the school, one of the local papers made the following notice:

> Sixteen of the deaf of the community were present, a larger number than was ever known here before at any one funeral on a similar occasion. All testified to her worth as an instructor in the school and as a Sabbath school teacher at the Baptist Church. In addition to the above, all the teachers and officers of the school turned out to pay their last sad tribute of respect to the memory of one whom they had ever held in high esteem, both as a colaborer and friend.

The following resolution was adopted by the Teachers' Association of the school:

> Whereas it has pleased our Heavenly Father to remove by death Mrs. Mary Hunter Fiske, who was for fourteen years a teacher in the Wisconsin School for the Deaf; and
>
> Whereas her gentle Christian character and exceptional ability as a teacher were ever used to promote the cause of education and the best interest of the school:
>
> *Resolved*, That in her death the profession has lost a useful, faithful, and conscientious member, the school a valued instructor, and the deaf a friend, and we the teachers and officers of the school desire to express our highest esteem for her and appreciation of her work.
>
> —*Warren Robinson.*

LOUIS H. HILDEBRAND.

An unfortunate circumstance that marred the auspicious opening of the fifteenth meeting of the convention was the sad news of the death from heart disease of Louis H. Hildebrand, a delegate from Indiana, which occurred as he was riding his bicycle to Columbus from Indianapolis.

The occurrence at that particular time was the more distressing for the reason that Mr. Hildebrand was much interested in the meeting of his associates that was drawing near, and had made careful preparation to attend. There were many expressions of sorrow by the delegates upon learning of his untimely end. They remembered well the genial young man whose acquaintance they had formed at the Flint convention, and had been impressed by his frank, manly demeanor. Mr. Hildebrand was especially interested in the industrial section of the convention, in whose deliberations he had hoped to take active part.

The sudden and unexpected occurrence caused a feeling of poignant regret among the Indianapolis friends of the deceased. When the late night train reached the city with the remains en route to Huntingburg, Ind., the place of interment, many of his friends were at the station as a slight expression of their regard. The casket was opened and the sorrowing friends given a last look at all that was mortal of one who but the morning before, full of hope and expectation, had bid them a cordial good-bye, little realizing that it was a parting unto eternity.

Mr. Hildebrand was 36 years of age at his death, and unmarried. At 9 he lost his hearing. He received a part of his education at the institution in Indianapolis. Never of a really robust constitution, he had little of that invigorating experience which is the lot of the sturdy, healthy boy, taking no part in field sports that are the delight and the inspiration of boyhood. His death was a result of the unusual exertion of a long wheeling trip, and it did not surprise his most intimate friends, who were aware of his physical condition. Indeed, they would have dissuaded him from the undertaking, but his cycling enthusiasm and confidence in the improved state of his health were greater than his discretion.

Mr. Hildebrand was prominent in deaf-mute society in Indiana, and popular with all who knew him. He read, wrote,

and spoke both English and German. He had conducted a shoe shop in his native town, Huntingburg, until appointed instructor in shoemaking in the Indiana institution in 1891, in which capacity he served until his death. In his work, with which he combined business tact, he was skilled and artistic. He was also proprietor of a bicycle-repairing shop in Indianapolis, and by industry and thrift had accumulated considerable property.

The following resolutions were adopted by the delegates from Indiana, a copy of which was sent to Mr. Hildebrand's father:

Minute of action taken by the Indiana delegation to the Convention of American Instructors of the Deaf, held at the Ohio institution, in reference to the death of Louis H. Hildebrand, which occurred near Knightstown, Ind., July 26, while on his way to attend said convention.

It is with profound sorrow that we heard of the death of Louis Hildebrand, a fellow-member of the corps of instructors in the Indiana Institution for the Education of the Deaf.

We hereby bear testimony to his intelligence and fidelity in the position which he has occupied for the past eight years and to his superior social and religious characteristics as an acquaintance and friend.

We tender our sincere sympathy to his parents and relatives in their bereavement, and send them this sorrowful greeting.

—*Albert Berg.*

MISS LUCY B. McMASTER.

After a sudden and sharp illness Miss McMaster's work for the deaf was brought to a close October 19, 1896. She was graduated at the Rochester Free Academy, and in 1884, after pursuing a course in normal training, became a teacher in the school for the deaf in that city. Having chosen her life work, it became her aim to perfect herself in it and she allowed no opportunity for growth to pass by. She was an active member of the American Association for the Promotion of Teaching Speech to the Deaf, attended all its gatherings, and was ever on the lookout for new and improved methods. As a teacher of speech, her work was marked by wise enthusiasm and untiring interest.

In the death of Miss McMaster a loss which seemed irreparable came, not to the school alone, but to the various human interests with which she was in touch. Her immediate home lost a devoted sister, the church with which she was identified an earnest and helpful worker, and the school for the deaf a valued and inspiring teacher.

Miss McMaster had the true teacher spirit—her pupils were her children; their interests and welfare were close to her heart, and many a character was strengthened and upbuilded by her sympathy, courage, and strength. She loved her children, she loved all her coworkers, and she had a gracious tact, which guided her sympathies in her intercourse with others and brought always to her lips the right and helpful word.—*Harriet E. Hamilton.*

HENRY N. FELKEL.

Henry N. Felkel, for four years superintendent of the Florida School for the Deaf and the Blind, passed from this world to the rest of paradise on the 11th day of February, 1897. He was a native of Florida, born in 1850, and at the age of 15 years he started in business for himself. He was educated at the West Florida Seminary and graduated with the degree of B. A. The same seminary afterwards conferred on him the degree of M. A. He began his first teaching in a country school in 1874. Three years later he was appointed superintendent of public instruction of his native county, to which office he was afterwards elected for four successive terms. He was then called to the chair of English literature and physics in his alma mater. In 1886 he was appointed principal of the Tallahasse City public schools, and then was chosen principal of the new State Normal School, located at De Funiak Springs, and managed it in a very successful way for six years. In June, 1893, he accepted the position offered him as the superintendent of the Florida School for the Deaf and the Blind. He conducted the school with good success, and served with ability as its head. Having a heart full of tender love for children, he seemed all the more adapted to meet the needs of the afflicted children of that State. He was a scholarly man, and advanced rapidly in the profession as one of the best teachers and then became a widely known lecturer in that State. He leaves a widow, daughter, and two sons, to whom pupils and teachers of the school tender their heartfelt sympathy.—*Lars M. Larson.*

HARVEY D. DE LONG.

Harvey D. De Long, a valued teacher in the Virginia School for the Deaf, was born and reared in Pennsylvania. He received his early education in the School for the Deaf in Philadelphia, Pa., and graduated with honor in 1888. In the following autumn he entered Gallaudet College, and graduated

with the degree of B. A., being the valedictorian of the class of 1893. Soon after his graduation he accepted a position offered him as instructor in the Virginia school, where he continued until his work was interrupted by the illness that terminated in his death, March 19, 1897, in the twenty-ninth year of his age. In the summer of 1894 he married Miss Lily Bicksler, a native of Pennsylvania, who graduated from the Gallaudet College with the degree of B. A., being the valedictorian of the class of 1894. Their happy union resulted in the birth of one child, on the the second anniversary of their marriage, and this child was named after his deceased father. The Virginia school deeply felt the loss of Mr. De Long as an excellent, faithful, and efficient worker. He was a man of high education and excellent character, with Christian convictions. He was very much interested in the welfare of the deaf generally, and was always ready and earnest in the discharge of his duties in the school.—*Lars M. Larson.*

MRS. L. C. IRBY.

Mrs. Irby, the eldest child of Rev. N. P. Walker, the founder of the South Carolina School for the Deaf and the Blind, and sister of Supt. N. F. Walker, died October 10, 1896, at the age of 58. She began work as a teacher in the above-named school in 1854, when she was 16 years of age, and remained in the work almost continuously up to a short time prior to her death. She was twice married; first, in 1856, to Mr. J. S. Henderson, a teacher in the South Carolina School for the Deaf and the Blind, and second, in 1879, to Capt. G. M. Irby.—*N. F. Walker.*

RUFUS HENRY LAMB.

At the Arkansas School for the Deaf the well-known teacher, R. H. Lamb, died of consumption on Christmas eve, 1896. The deceased was born in Calico Rock, Ark., January 26, 1857, and grew into a happy and bright child. He was one of the first pupils admitted to the above school, and there passed a successful and creditable career as a student. He labored in his alma mater in various positions, such as supervisor, shoe-shop foreman, teacher, and principal who at last took charge of and instructed the separate department for the negro deaf connected with the school, having served for twenty-seven years from the time of his entering the school as a learner

and then as a worker to that of his death. In 1893 he was united in marriage to Miss Allie Gilliam, who soon became the matron of the department, and then managed it worthy of the appropriations given for its maintenance. He proved himself a good and devoted teacher and a faithful and worthy friend of the deaf, and also a gentleman bearing a gentle, honest, noble, and Christian character. He was held in high esteem by all with whom he was associated, and his name is specially kept in grateful and honorable remembrance by the deaf on account of his kind and valuable work to them. Soon after the usual Christmas merriment had commenced the news of the death of Mr. Lamb was announced, which cast profound sorrow over all present, everything becoming quiet and the festival being suspended. The impressive funeral service was conducted at the school Christmas day, and the sermon was preached by a blind preacher. The deceased teacher's last resting place is in the burial lot belonging to the school.—*Lars M. Larson.*

ANNA V. FORD.

You may break, you may shatter the vase, if you will,
But the scent of the roses will hang round it still.

Miss Ford has been dead two years, yet pupils from the Michigan school for the deaf, when visiting Glenwood Cemetery, stop by her grave and speak of her as one who always smiled so sweetly, and said so many kind things.

Though Miss Ford was employed by the school only two years, she especially endeared herself to her fellow teachers, and has left an enduring monument to her lovable character in the minds of these children.

Anna V. Ford died in Flint, August 5, 1896. She was employed in the Michigan school from September, 1894, until the time of her death. The first year she was in the manual department, but the next year, after a course of training under Mrs. Lottie K. Clarke, she occupied a position in the oral department.

Miss Ford was one of Flint's society girls, and took an active part in a musical organization, being a pianist of considerable ability. As a teacher of the deaf, she was very much in love with her work and often expressed herself as very happy in that employment.

Though the profession has lost much by her early death, yet

it is better for her having been in it, even if only for so short a time, and those who came within the influence of her sunny disposition can but be better for having known her.—*Carrie E. Billings.*

BELLE SCHRIKEMA.

It is not very often that we, who are engaged in the work of educating the deaf, are called upon to mourn the loss by death of one who loved her work, her associates, her pupils, and her school as well as did Belle Schrikema. At the time of her death, which occurred on the morning of February 27, 1898, she was one of the youngest members of the teaching force of the Michigan School for the Deaf, and had only been engaged in the work a little over three years. During that short period she had proven herself, by her ability, her faithfulness, her untiring devotion to her work, and her amiable disposition, a kind and patient teacher and a sincere friend of the deaf.

Belle Schrikema was born in Grand Rapids, Mich., on January 12, 1875. At the early age of 6 years she had an attack of scarlet fever, which caused the loss of her hearing. When nearly 11 years of age her parents sent her to the public schools of Grand Rapids, where she remained only a short time.

In the fall of 1886 she entered the Michigan School for the Deaf as a pupil, and was very fortunate in being placed in a class of beginners taught by a teacher of long experience. Being naturally bright and ever ready to learn, her advancement was rapid—so rapid that she was soon promoted into the class which graduated with high honors in June, 1895, and which was one of the brightest classes the Michigan School for the Deaf has ever graduated.

At the beginning of her senior year, in the fall of 1894, her superintendent, perceiving in her those qualities of mind and heart which have the making of an efficient and valuable teacher, appointed her to instruct for half a day a class of beginners. Throughout the year she did this work, and, in addition, continued her senior studies and attended class recitations. So well did she do her work as a teacher, and so well did she like it, that, immediately after her graduation in June, 1895, she was appointed one of the regular teachers in her alma mater.

Graduation at the top of a very bright class and her successful appointment as a regular teacher did not mean the end of study and self-improvement with her. Her growing love for her chosen work led her to outline a course of study and reading that meant years of earnest, unremitting labor. After the completion of her first year's work as a regular teacher, she devoted her long summer vacation to a course of study in the Grand Rapids Training School for kindergarten teachers. In short, during her entire three years as a teacher she was continually preparing herself for a career of great usefulness to the deaf of Michigan in general, and to the Michigan School for the Deaf in particular.

In the spring of 1897 she had an attack of measles, and when convalescent returned to her school-room duties. The following summer she was taken very ill with typhoid fever which, as time went on, developed into that dreaded and fatal disease, consumption. She, however, returned to resume her school duties with the opening of school in the fall of 1897, but was not that sturdy, healthy, and joyous maiden which she was before the close of school in June. Her work, which had heretofore been a great pleasure to her, had become a heavy burden. She struggled on until December, when she went home to spend the Christmas holidays. That was the last her associates and the children of the school saw of her, for she became too weak to return and kind friends placed her in the Butterworth Hospital in Grand Rapids, where she had the best of care and medical treatment. But all in vain, for on February 27, 1898, she passed away.

As a teacher, Belle Schrikema was faithful, thorough, patient, kind, and untiring in her efforts to impart to her little ones what she had herself received—the priceless blessing of an education. She loved her pupils and saw in their growing minds and forming characters the handiwork of God. It was her one great and constant wish that they should grow up to be good men and women. She did not confine her work alone to the schoolroom. To every movement intended for the good, or amusement, of the pupils, she gladly and cheerfully lent a willing hand, and her influence for good was felt throughout the whole school.

By one of her friends, who had known her long and intimately, she was called "the mute singer of the power of God." And well does this become her, for she was one of the original

members of the school choir, which originated soon after the advent of Francis D. Clarke as superintendent, and which has ever since rendered, in beautiful and expressive signs, hymns at the devotional services in the Michigan school.

It is hard for any school to lose so young and promising, so efficient and valuable a teacher as was Belle Schrikema. Hers was a beautiful life; hers was a beautiful soul. And it may be that the Master Teacher, who taught on the plains of Galilee, and who from the Mount gave to the world the grandest sermon that has ever been recorded in the annals of literature, had need of her for a purer, a nobler, and a grander work beyond.—*J. M. Stewart.*

JOHN H. YEAGER.

John Henderson Yeager was born near Madison, Mo., May 20, 1843. His mother died in his infancy and his father soon after removed with him to Louisville, Ky. At the age of 4 an attack of measles deprived him of hearing and in 1852 he entered the Kentucky School for the Deaf, at Danville, graduating therefrom in 1861. While a pupil he learned the trades of marble cutting, carpentering, and printing. As a printer he was thoroughly competent and was employed on a number of the large dailies of Louisville and other cities. In 1876 he was elected to succeed Mr. Jas. G. George, deceased, as teacher and foreman of the printing office in the Kentucky School for the Deaf. The latter position he resigned in 1887. In 1878 he married Miss Annie Herndon, a graduate of the Kentucky school who, with five children, survives him.

As a teacher, Mr. Yeager was very successful, being thoroughly devoted to his profession, industrious and painstaking. Unlike some teachers whose interest in their pupils ceases when they leave the schoolroom, his extended to their daily lives, and he was always ready to assist in their care and entertainment. The Christmas festivities were his special care, and he labored assiduously to render them instructive and amusing.

His death occurred April 4, 1896.—*Chas. P. Fosdick.*

MISS EDITH STOCKTON RAMBO.

Miss Edith S. Rambo, instructor of the oral class in the Louisiana Institution for the Deaf and Dumb, died at the home of her mother in Stamford, Conn., on the 10th of September, 1895, after an illness of three weeks.

Miss Rambo came to us in 1885 and started the oral class. All the time she had her pupils in mind, and labored indefatigably for their success, and now they mourn her departure. At the time she was doing yeomen services for the school she had to endure bad health, but would not allow this to keep her from doing what she considered her duty.

The board of directors passed highly commendatory resolutions concerning Miss Rambo's work as a teacher and her wholesome, helpful influence in our school.

The following resolutions were adopted by the teachers and officers with whom Miss Rambo served:

Whereas our Heavenly Father has in His infinite wisdom removed from our midst our worthy and esteemed colaborer, Miss Edith Stockton Rambo; and

Whereas her earnest and enthusiastic life as a teacher and a Christian lady call for a manifestation of our appreciation and remembrance; therefore

Resolved, That with most heartfelt sympathy we extend the hand of condolence to the mother and relatives of our deceased friend.

Resolved, That these resolutions be printed in the Louisiana Pelican and that a copy be sent to the mother of the deceased.

—*H. L. Tracy.*

CLARA ELLEN PARKER.

On the 1st day of October, 1897, Clara E. Parker, for five years teacher in the northern New York school for the deaf at Malone, died at her home in New Hampshire. She was a daughter of honored and intelligent deaf parents who were educated in the American school for the deaf at Hartford, Conn. She was born in West Rupert, Vt., June 28, 1866. She received her early education in various public schools, and then graduated with honor from an academy of great learning and high reputation in New England. She taught in several schools at different times, and succeeded in doing very satisfactory and excellent work amid the many ordinary discouragements. Finally she received an appointment as teacher in the School for the Deaf at Malone. She had lived almost all her life among and labored for the deaf, and showed her strong friendship and true sympathy for them. She was a woman remarkably fitted by the qualities of her mind and heart for the profession in which she was engaged. In her death the school lost a faithful friend, a loyal servant, and an

efficient teacher. She was also remembered by all who knew her as a noble, earnest, and Christian person and she passed away in peace with a real hope of a glorious resurrection in heaven.—*Lars M. Larson.*

ANNA ELIZABETH FULLER.

Anna Elizabeth Fuller was born in Keokuk, Iowa, on May 21, 1873, and died at the Iowa School for the Deaf January 4, 1898, after a brief illness.

Miss Fuller lost her hearing through sickness at an early age, entering the Iowa school at 9 years of age, her mother being matron of little boys at that time. Except for a year's absence on account of ill health she remained in school till her graduation in 1893, completing her course with high standing in a class of bright scholars. She was ambitious to excel in her studies and was industrious and attentive. In the fall of 1893 she had the good fortune to be given a temporary position as teacher in her alma mater, which later became permanent. She served over four years as a faithful, capable teacher, till her untimely death. Miss Fuller was of an artistic temperament and worked in both crayon or oil with equal skill. She had been in poor health for three years before her death, and had been advised to ask for a year's leave of absence in order to regain her health; but she could never consent to give up her work till it was too late. Her death was unexpected and painful, as she died in convulsions within three hours after the first attack. She died esteemed by all who knew her. Her remains were taken to her old home at Keokuk, where the body was interred in the family lot. Her suffering is over and she is now at rest.—*Conrad Spruit.*

ANNA ELIZABETH FULLER.

Anna Elizabeth Fuller was born in Keokuk, Iowa, May 21, 1873: She lost her hearing in babyhood. At the age of 8 years she was sent to the Iowa School for the Deaf, at Council Bluffs, where she studied through all of the grades and graduated very creditably with the class of June, 1893.

In the following fall she was appointed a teacher in her alma mater, where she remained in the discharge of her duties until she was called from her earthly labors by her untimely death on the 4th of January, 1898.

Her death resulted from a convulsion to which she was subjected, and occurred within a short time after the attack. Funeral services were held in the chapel of the institution the following day. The floral offerings were unstinted and exquisite, expressive of the loving hearts she left behind. The service was very appropriate and expressive of the high esteem in which she was held by the institution and her friends. Her remains were taken to Keokuk, Iowa, and interred in the family lot there.—*F. C. Holloway.*

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 32.

SUPPLEMENTAL ESTIMATES OF APPROPRIATIONS, WAR DEPARTMENT.

LETTER

FROM

THE ACTING SECRETARY OF THE TREASURY,

TRANSMITTING

COPY OF A COMMUNICATION FROM THE SECRETARY OF WAR SUBMITTING SUPPLEMENTAL ESTIMATES OF APPROPRIATIONS TO BE INCLUDED IN THE URGENT DEFICIENCY BILL.

DECEMBER 13, 1898.—Referred to the Committee on Appropriations and ordered to be printed.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., December 12, 1898.

SIR: I have the honor to transmit herewith, for the consideration of Congress, copy of a communication from the Secretary of War, of the 10th instant, submitting supplemental estimates of appropriations for the six months ending June 30, 1899, which he requests may be included in the urgent deficiency bill, as follows:

Equipment of engineer troops	$30,000
Civilian assistants to engineer officers	30,000

Respectfully, yours,

O. L. SPAULDING,
Acting Secretary.

The PRESIDENT OF THE SENATE.

WAR DEPARTMENT,
Washington, December 10, 1898.

SIR: I have the honor to forward herewith, for transmission to Congress, estimates of appropriations required by the War Department for the service of the six months ending June 30, 1899, as follows:

Equipment of engineer troops	$30,000
Civilian assistants to engineer officers	30,000

It is respectfully requested that the items may be included in the urgent deficiency bill now before Congress.

Very respectfully,

R. A. ALGER,
Secretary of War.

The SECRETARY OF THE TREASURY.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 7, 1898.

SIR: I have the honor to submit herewith a copy of H. R. 10989, Fifty-fifth Congress, third session, a bill "making appropriations to supply urgent deficiencies in the appropriations for the support of the military and naval establishments for the last six months of the fiscal year ending June 30, 1899, and for other purposes." This bill proposes to reappropriate and make available until June 30, 1899, for the purposes named in the bill, certain portions of the balances that may remain unexpended on January 1, 1899, from deficiency appropriations whose availability is limited by the terms of the acts making the appropriations to January 1, 1899.

On examination of the bill, it is discovered that no appropriations pertaining to the Engineer Department contained in the deficiency acts mentioned are included among those whose availability is proposed to be extended to June 30, 1899.

This bill was prepared at a time when I was absent from the city upon the War Commission and occupied by other important public duties, and I understood from the notices in the public press of this proposed extension of the appropriations that all unexpended balances of the "January 1, 1899," appropriations were to be made available for expenditure until June 30, 1899, for the purposes for which originally appropriated. For these reasons I have not before submitted any suggestions as to the provisions of the bill.

I now have the honor to state that the following appropriations will be required for the last six months of the fiscal year ending June 30, 1899, for purposes named in the deficiency acts mentioned pertaining to the Engineer Department, and to recommend that they be inserted in their appropriate place in the bill H. R. 10989:

ENGINEER DEPARTMENT.

For pontoon trains, intrenching tools, instruments, drawing materials, thirty thousand dollars.

For services of surveyors, draftsmen, photographers, clerks to engineer officers on the staff of division and corps commanders, thirty thousand dollars.

Very respectfully, your obedient servant,
JOHN M. WILSON,
Brig. Gen., Chief of Engineers, U. S. Army.

Hon. R. A. ALGER,
Secretary of War.

Supplemental estimates of appropriations required for the service of the last six months of the fiscal year ending June 30, 1899, by the Chief of Engineers.

Equipment of engineer troops:	
For pontoon trains, intrenching tools, instruments, and drawing materials (act May 4, 1898, vol. 30, p. 396, sec. 1; July 7, 1898, vol. 30, p. 704, sec. 2)	$30,000
Amount appropriated for the first six months of the current fiscal year, ending June 30, 1899	150,000
Civilian assistants to engineer officers:	
For services of surveyors, draftsmen, photographers, clerks to engineer officers on the staff of division and corps commanders (act July 7, 1898, vol. 30, p. 704, sec. 2)	30,000
Amount appropriated for the first six months of the current fiscal year ending June 30, 1899	60,000

O

55TH CONGRESS, 3d Session. } SENATE. { DOCUMENT No. 33.

PROTECTION OF THE PEOPLE OF INDIAN TERRITORY.

LETTER

FROM

THE ACTING SECRETARY OF THE TREASURY,

TRANSMITTING

A COMMUNICATION FROM THE SECRETARY OF THE INTERIOR SUBMITTING AN ESTIMATE OF APPROPRIATION, $106,600, TO CARRY INTO EFFECT THE PROVISIONS OF THE ACT OF JUNE 28, 1898 (30 STAT., P. 495), ENTITLED "AN ACT FOR THE PROTECTION OF THE PEOPLE OF THE INDIAN TERRITORY, AND FOR OTHER PURPOSES."

DECEMBER 14, 1898.—Referred to the Committee on Appropriations and ordered to be printed.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., December 13, 1898.

SIR: I have the honor to transmit herewith, for the consideration of Congress, a communication from the Secretary of the Interior, of the 10th instant, submitting an estimate of appropriation, $106,600, to carry into effect the provisions of the act of June 28, 1898 (30 Stat., p. 495), entitled "An act for the protection of the people of the Indian Territory, and for other purposes," the same being for the remainder of the fiscal year ending June 30, 1899, and which, from the pressing need of the said appropriation, he requests that it be provided in the urgent deficiency bill now pending.

Respectfully, yours,

O. L. SPAULDING,
Acting Secretary.

The PRESIDENT OF THE SENATE.

DEPARTMENT OF THE INTERIOR,
Washington, December 10, 1898.

SIR: The act of Congress entitled "An act for the protection of the people of the Indian Territory, and for other purposes," approved June 28, 1898 (30 Stat., 495), imposes certain duties upon the Commission to the Five Civilized Tribes and the Secretary of the Interior, but makes

no appropriation of any moneys to enable this Department to execute the same.

Section 11 of said act declares that "the commission heretofore appointed under acts of Congress, and known as the 'Dawes Commission,' shall proceed to allot the exclusive use and occupancy of the surface of all the lands" of the several nations or tribes susceptible of allotment among the citizens thereof. Section 12 requires said allotments to be confirmed by the Secretary of the Interior.

Under section 13 thereof the Secretary of the Interior is required to make rules and regulations in regard to "the leasing of oil, coal, asphalt, and other minerals," and to fix the amount of royalty to be paid by the lessees. Rules and regulations have been prepared under said section, and also under the agreement set out in section 29 of said act, which require all mineral leases to be approved by the Secretary of the Interior.

Section 15 requires that a commission shall be appointed for each town in the Choctaw, Chickasaw, Creek, and Cherokee nations, and prescribes the manner of laying out town sites by said commissions where the towns have a population of 200 or more, and designates the way in which owners of improvements upon town lots may acquire title thereto. The provisions of this section relative to the Choctaw and Chickasaw nations are modified by the agreement in said section 29 of the act, to the extent that only one such commission, consisting of two members each, shall be appointed for said nations, respectively; but said agreement expressly declares "that no charge or claim shall be made against the Choctaw or Chickasaw tribe by the United States for the expense of surveying and platting the lands and town sites, or for grading, appraising, and allotting the lands, or for appraising and disposing of the town lots as herein provided."

Section 16 makes it unlawful for any person to claim for his own use, or for the use of anyone else, any royalty on minerals or on any timber or lumber or any other kind of property whatsoever, and declares that "all royalties and rents hereafter payable to the tribe shall be paid, under such rules and regulations as may be prescribed by the Secretary of the Interior, into the Treasury of the United States to the credit of the tribe to which they belong." But said section contains a proviso which allows any citizen to receive the rents upon agricultural or grazing lands to the amount of his reasonable share, and that to which his wife and minor children are entitled in the allotments provided for by said act. The provisions of this section are modified, so far as the Choctaw and Chickasaw nations are concerned, by the provisions of the agreement in section 29 of said act with respect to the duty of disposing of town sites and the collection of royalties from leases of mineral lands as therein provided.

Section 19 of said act prohibits the payment of any moneys on any account by the United States to any officer of the tribal governments for disbursement, and requires the payment of all sums to the individual members of said tribes under the direction of the Secretary of the Interior.

Section 20 allows "the Dawes Commission" to employ necessary clerical assistance, "including competent surveyors, to make allotments."

Section 21 requires said commission to make correct rolls of citizenship of the several tribes, which rolls, when approved by the Secretary of the Interior, are declared to be final.

Section 27 authorizes an Indian inspector to be located in the Indian Territory, to perform any duties relating to affairs therein, under the direction of the Secretary of the Interior.

Section 29, containing the agreement with the Choctaw and Chickasaw tribes, which has been duly ratified, declares—

> That the United States shall survey and definitely mark and locate the ninety-eighth meridian of west longitude between the Red and Canadian rivers before allotment of the lands herein provided for shall begin.

Moreover, the agreement confirmed by the act of Congress approved July 1, 1898 (30 Stat., 567), requires the lands of the Seminole tribe to be allotted, under the supervision of the commission, to the Five Civilized Tribes without charge or claim against said tribe.

No appropriation was made to carry out the provisions of this law, and the Secretary of the Interior was obliged to organize a division in his office known as the "Indian Territory Division," which has charge of all business relating to the Indian Territory, and to assign clerical force to said division, notwithstanding they could not be well spared from the places in which they were regularly employed. These details should be no longer continued, but specific appropriation made by Congress for the employees necessary to carry on the work of the new division.

In order to properly execute the provisions of said acts, it is imperatively necessary that appropriations be made for the remainder of the fiscal year as follows:

Salary of chief of Indian Territory Division, at $2,250 per annum, to June 30, 1899	$1,125.00
1 clerk class 4	900.00
1 clerk class 3	800.00
2 clerks class 1	1,200.00
1 copyist	450.00
	4,475.00
In the Office of the Commissioner of Indian Affairs:	
Pay of employees, Indian Territory, to June 30 next	4,000.00
Incidental and traveling expenses to June 30 next	1,500.00
Salary and expenses of revenue inspectors to June 30 next	3,000.00
Salary and expenses of two school supervisors to June 30 next	2,500.00
Additional employees in the Office of Commissioner of Indian Affairs during present fiscal year, to be appointed under such rules and regulations and upon such examination as the Secretary of the Interior may prescribe	9,300.00
Salary and expenses, town-sight commissions	30,000.00
Locating ninety-eighth meridian, under the supervision of the Director of the Geological Survey	6,300.00
To begin allotments	50,000.00
Total	106,600.00

In view of the very pressing need for the appropriation of the several sums as above set forth, in order that this Department may duly execute the provisions of said acts of June 28, 1898, and July 1, 1898, which are mandatory, I have the honor to request that you will transmit said estimates to Congress in order that the same may be placed upon the urgent deficiency bill now pending.

A copy of the report of the Commissioner of Indian Affairs is inclosed herewith.

Very respectfully,

THOS. RYAN,
Acting Secretary.

The SECRETARY OF THE TREASURY.

DEPARTMENT OF THE INTERIOR,
OFFICE OF INDIAN AFFAIRS,
Washington, December 9, 1898.

SIR: I have the honor to acknowledge receipt of your communication of the 19th ultimo, inviting attention to the act approved June 28, 1898, for the protection of the people of the Indian Territory, and for other purposes, known as the "Curtis Act," and directing that an estimate be prepared of the amount needed under the several provisions of said act and any others for which, in the judgment of this office, additional appropriation is needed, and submit it to the Department for consideration.

Upon receipt of this letter the United States Indian inspector in the Indian Territory was called upon to submit an estimate of what would be needed to carry out the provisions of that act at that end of the line. This he has done, and reports by telegram as follows:

Clerks inspector and agent's office, including present force, eight thousand; revenue inspectors Creeks and Cherokees, six thousand; two school supervisors, and expenses Creeks and Cherokees, five thousand; two for Choctaws and Chickasaws, considered payable from coal royalties; traveling expenses agent making payments, three thousand; town-site commissions sections fifteen and twenty-nine, salaries not designated, estimated thirty thousand; total, fifty-two thousand, one-half necessary from January to June. Allotment commissioners and appraisers not included.

In the communication to the Department inclosed in Department letter of the 30th ultimo, the Director of the Geological Survey submits an amended estimate of the amount needed to survey, locate, and mark the ninety-eighth meridian of west longitude. He had on the 18th of October reported that—

The estimated cost of surveying and establishing the ninety-eighth meridian and obliterating the marks and corners upon the existing boundary line and making a subdivision survey is as follows:

Field work, ninety-eighth meridian	$2,500.00
Subdivision	1,750.00
Examination	425.00
Office work, ninety-eighth meridian	200.00
Subdivision	325.00
	5,200.00

His amended estimate is as follows:

As telegraphic facilities can be obtained at numerous railway stations near the ninety-eighth meridian, one longitude station can be located at either extremity or midway between the extremities, as desired.

The field expenses for the astronomical work, including those for personal equation observations at the Washington University, St. Louis, and the salary of the observer at St. Louis will amount to	$450.00
Salary of the observer in the field	250.00
Total cost for one station	700.00
It will be more exact, however, to locate two longitude stations—one just south of the Canadian, the other just north of the Red—at an additional cost for the second station of	400.00
Total for two stations	1,100.00
This sum, added to the estimated cost of field work and office work, subdivision, etc., as per estimate of October 18, namely	5,200.00
Makes a total for the location and marking of the meridian of	6,300.00

In the annual report of the Dawes Commission, quoted in the last report of the honorable Secretary of the Interior, the commission states that the rolls of the Seminoles are about completed, so that the commission may at any time, when provided with means, begin the work

of allotment according to the provisions of the agreement, but in order to do this an appropriation of at least $50,000 is believed to be necessary for employment of adequate assistance therefor.

The exceedingly large amount of additional work imposed upon this office by the act referred to renders it absolutely essential that additional force should be provided immediately. Within the last decade the work at this office has fully doubled without a corresponding increase in its clerical force. The extent of the Indian service, its growth and the causes that led to it, are noticed in a report made by Mr. Sherman, chairman of the House Committee on Indian Affairs, to Congress, on January 5, 1897 (House Report No. 2383, Fifty-fourth Congress, second session). As to its extent, the report says:

The extent of the Indian Department is not generally appreciated. While the Bureau in Washington is small, the outside department is almost coextensive with the country itself, extending, as it does, from the Gulf of California to the Great Lakes, and from Florida to Puget Sound, and even beyond. It embraces territory greater in extent, if taken together, than all the New England States, New York, New Jersey, Delaware, and Maryland combined, and an Indian population of nearly, if not quite, 250,000. The condition, character, and habits of the Indians occupying this territory are almost as various as the tribes themselves. The occupations of those in one part of the country are entirely dissimilar to the occupations of those in another, depending largely upon their surroundings. In some sections they excel as fishermen; in others, stock raising; in others, agriculture.

As to its growth and the causes thereof, the report says:

The increase in the number of Government schools and the development of the Indian school system has contributed very largely, perhaps more than anything else, to increase the duties of the Commissioner of Indian Affairs. Without going into the history of school work among the Indians, it may be sufficient to show the growth of Indian schools in a single decade. Ten years ago there were 5 large training schools; to-day there are 32. In 1886 there were 214 Indian schools of all descriptions; in 1896 there were 293. For the fiscal year 1886 the amount appropriated for Indian education, outside of treaty provisions, was, in round numbers, $1,211,000; in 1896 it had swelled to $2,517,000. In the year to come, if the policy indicated by the last Congress is to be carried out with respect to educating Indian pupils under contract, there will be a still further increase in Government schools, and consequently a still greater demand upon the Commissioner and his office.

The allotment of lands, which practically began under the act of 1887 and has been carried on quite extensively ever since, has brought to the Commissioner additional care and responsibility which were hardly contemplated in 1832. The most difficult and intricate questions growing out of this are constantly arising, requiring much time, patience, and legal skill to determine. Indeed, the whole question of Indian lands, since so many of them have been thrown open for settlement, has assumed an importance of no slight magnitude.

The responsibility arising out of financial transactions is heavy and increasing, and the questions arising therefrom are important and often perplexing. The total expenditure for the Indian Service for 1832 was, in round numbers, $1,350,000; that for 1895 aggregated nearly $10,000,000. The expenditure for the current fiscal year will, it is estimated, reach $12,000,000. The responsibility for this large expenditure rests almost wholly upon the Commissioner of Indian Affairs, as it is, as a rule, upon his recommendation and under his direction that it is made.

To properly administer the variety of affairs growing out of these conditions is extremely difficult with the force now at the command of this office, but when the burdens imposed by the Curtis bill are added it will be a physical impossibility.

A number of additional copyists are needed, and, above all, a number of clerks with sufficient experience and ability to deal with the difficult and intricate questions constantly arising. There will be 128 tract books to be made up from plats of survey covering the territory of the Five Civilized Tribes. This will require at least eight copyists several months to do.

The financial transactions will be largely increased, as payments which have heretofore been made by the tribal governments are now

to be made through this office. In addition, the care of the schools, which have heretofore been conducted by the tribes themselves, will add materially to the work, the volume of which altogether will be enormously increased.

Estimate has therefore been made for 10 copyists and 6 clerks for six months, or until June 30 next.

From the data on hand, therefore, the following estimate has been prepared and is submitted:

Pay of employees, Indian Territory, to June 30 next	$4,000.00
Incidental and traveling expenses to June 30 next	1,500.00
Salary and expenses of revenue inspectors to June 30 next	3,000.00
Salary and expenses of two school supervisors to June 30 next	2,500.00
Additional employees, this office, to June 30 next	9,300.00
Salary and expenses, town-site commission	30,000.00
Locating ninety-eighth meridian	6,300.00
To begin allotments	50,000.00
Total	106,600.00

With the view of having this amount appropriated, a form of appropriation has been prepared and is herewith submitted, with the recommendation that it be submitted to Congress with the urgent request that it be adopted and passed by both Houses at the earliest practicable moment, either in the form of a joint resolution or a special act. It is suggested that the former is more expeditious.

Very respectfully,

W. A. JONES, *Commissioner.*

The SECRETARY OF THE INTERIOR.

Proposed joint resolution.

To enable the Commissioner of Indian Affairs, under the direction of the Secretary of the Interior, to carry out an act entitled "An act for the protection of the people of the Indian Territory, and for other purposes," approved June twenty-eighth, eighteen hundred and ninety-eight, namely: For general incidental expenses of the office of the United States Indian inspector and the United States Indian agent in the Indian Territory for the remainder of the current fiscal year, including pay of employees and traveling expenses of said agent in connection with his duties under said act; for salaries and expenses of revenue inspectors and two supervisors of Indian schools for the same period, and for salaries and expenses of the commission to lay out town sites, forty-one thousand dollars; for pay of additional employees in the office of the Commissioner of Indian Affairs during the present fiscal year, to be appointed under such rules and regulations and subject to such examination as the Secretary of the Interior may prescribe, nine thousand three hundred dollars; for the purpose of surveying, marking, and locating the ninety-eighth meridian of west longitude, six thousand three hundred dollars; and to enable the commission to negotiate with the Five Civilized Tribes to begin to allot lands in severalty, as provided in said act, fifty thousand dollars; in all, one hundred and six thousand six hundred dollars.

O

LAPLAND FAMILY AND THEIR TENTS.

55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 34.

REPORT

ON

INTRODUCTION OF DOMESTIC REINDEER INTO ALASKA,

WITH

MAPS AND ILLUSTRATIONS,

BY

SHELDON JACKSON, LL. D.
GENERAL AGENT OF EDUCATION IN ALASKA.

1898.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1898.

IN THE SENATE OF THE UNITED STATES,

December 6, 1898.

Resolved, That the Secretary of the Interior be directed to transmit to the Senate the report of Dr. Sheldon Jackson upon "The introduction of domestic reindeer into the district of Alaska" for 1898.

Attest:

WM. R. COX, *Secretary.*

LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
Washington, December 13, 1898.

SIR: I am in receipt of Senate resolution of the 6th instant—

That the Secretary of the Interior be directed to transmit to the Senate the report of Dr. Sheldon Jackson upon "The introduction of domestic reindeer into the district of Alaska" for 1898.

In response thereto, I have the honor to transmit herewith a copy of the report indicated in the foregoing resolution.

Very respectfully,

THOS. RYAN,
Acting Secretary.

The PRESIDENT OF THE SENATE.

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EIGHTH ANNUAL REPORT

OF THE

INTRODUCTION OF DOMESTIC REINDEER INTO ALASKA.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION, ALASKA DIVISION,
Washington, D. C., December 31, 1898.

SIR: I have the honor to submit to you my eighth annual report on "The introduction of domestic reindeer into Alaska."

The year just closed has been one of more than usual interest. It opened with the Government relief expedition, in charge of Lieut. D. H. Jarvis, of the United States Revenue-Cutter Service, to the whalers in the neighborhood of Point Barrow, Alaska, and with a Government commission to Lapland, Norway, for the procuring of a colony of Laplanders and the purchase of a herd of reindeer trained to harness, to be used in transporting relief to the destitute people in the mining regions of Alaska; also, the establishment of a new reindeer station in the neighborhood of Unalaklik, 60 miles north of St. Michael. It being necessary to send Mr. William A. Kjellmann, the superintendent of the reindeer stations in Alaska, to Norway in charge of four families of Lapps, whose term of service had expired and who according to contract were to be returned to Lapland, Dr. A. N. Kittilsen, the physician and assistant superintendent, was placed in charge of the herd at the Teller Reindeer Station, with Mr. T. L. Brevig as his assistant. Mr. Frederik Larsen (Lapp) was kept with the herd as overseer, and Messrs. John Tornensis and Mikkel Nakkila (Lapps) were kept at the station during the fall of 1897, repairing and making sleds and harness, preparatory to the removal of a portion of the herd to the new station near Unalaklik.

On the last of October Dr. Kittilsen made a trip to Cape Nome, where he received from Antisarlook 53 male, 65 female, and 3 fawn reindeer for the Government, which had previously been loaned and were now being returned. He also secured 4 females and 3 fawns belonging to Tatpan, of Golovin Bay.

In the middle of November a trip was made to Cape Prince of Wales, returning November 28 with 3 head of deer belonging to the Government.

As Tautook, Sekeoglook, and Wocksock (Eskimo) had served their apprenticeship of five years, it was proposed to establish them at the

Teller Station with a herd of their own when the Government herd should be taken to the new Eaton Station. Accordingly, on December 3 each of the three received, according to contract, 20 females, 3 males, and 2 sled deer. These, together with those previously owned by them and since born in their herds, gave Tautook 77 head, Sekeoglook 59, and Wocksock 50, making a herd of 186 between them. The apprentice Ojello, being quite sick, was left with his family at the Teller Station.

On December 19, leaving Mr. Brevig in charge of the Teller Station, Dr. Kittilsen, in charge of the Lapps and apprentices other than those mentioned as having been left at the Teller Station, started across the country for Unalaklik with 450 reindeer and 40 sleds, arriving at Golovin Bay on the 29th of December. There were 17 in the party, counting women and children. The 7 deer brought from Cape Nome for Tatpan, an apprentice above mentioned, were transferred to the herd at Golovin Bay, and 17 deer belonging to Martin, an apprentice at Unalaklik, were lassoed and taken into the Government herd to be driven to the Eaton Station.

On January 3 the journey was resumed, but two days later a snowstorm of unusual severity was encountered, and the party went into camp, the deer being returned to the neighborhood of Golovin Bay, where the pasturage was more accessible. While in camp, January 10, Lieutenant Jarvis and Dr. Call, of the relief party for the whalers, arrived from the south and asked for reindeer transportation to Port Clarence. Accordingly, on January 12 Dr. Kittilsen, taking two of the apprentices, drove back with Lieutenant Jarvis and Dr. Call to the Teller Reindeer Station, where they arrived on the 19th. Leaving Lieutenant Jarvis to push on to Cape Prince of Wales and Dr. Call to Cape Nome, Dr. Kittilsen, with the apprentices, on January 26, started on their return to Golovin Bay, reaching there February 9. During Dr. Kittilsen's absence Lieutenant Bertholf, also of the Point Barrow relief expedition, had arrived at the reindeer camp near Golovin Bay and induced Frederick Larsen to take five deer and sleds to help him across Kotzebue Sound with provisions for the relief party, claiming that it was impossible to get the goods across the country with dog teams. After arriving at Kotzebue Sound, Lieutenant Bertholf retained the reindeer teams for his further trip to Point Hope, returning Frederik Larsen to Golovin Bay.

On the 13th of March camp was broken and a start made for Unalaklik, which place was reached on the 21st. The spring was utilized in cutting and hauling several hundred logs for the erection of houses at the new station, located near Unalaklik and named "Eaton," in honor of Gen. John Eaton, ex-Commissioner of Education. After the logs had been hauled to their destination the herd was moved to the foot of the mountains southeast of Unalaklik, where a good fawning place was found.

In April an expedition was made to Golovin Bay to return some provisions which had been borrowed from the Swedish Mission Station during the detention of the herd in that neighborhood the previous winter.

PERSONNEL.

Mr. William A. Kjellmann was continued as superintendent of the stations in Alaska, but being detailed for special duty in returning Lapps to their native country and in procuring a new colony, he was absent from the field until July. Returning from Norway and reaching Eaton Station, he immediately utilized the temporary presence of the large colony of Lapps by dividing them into three parties, one to have charge of the herd, a second party to freight the supplies from the landing place on the coast to the station, and the third party to erect the necessary buildings. This enabled him to make rapid progress in getting the new station in order for winter. When the station was last heard from, arrangements were in progress, by which it was expected that a large number of the Lapps would be distributed along the Yukon River for the purpose of carrying the United States mail, and the smaller number kept in the service of the reindeer stations. During the absence of Mr. Kjellmann, Dr. A. N. Kittilsen was in charge at the Teller Station until December, when he went with the herd and took charge of the new station on the Unalaklik River until the arrival of Mr. Kjellmann. On the arrival of Mr. Kjellmann, Dr. Kittilsen resigned and left for the mines, his place as physician being taken by F. H. Gambell, M. D., of Iowa. Upon the departure of Dr. Kittilsen from the Teller Station, Rev. T. L. Brevig was placed in charge.

With the increase of stations and enlargement of the work, Mr. Hedley E. Redmeyer was also made an assistant superintendent.

Herders.—Messrs. Tornensis, Nakkila, and Larsen, the Lapps that remained in Alaska, continue in the service of the Government. During the trip of myself and Mr. Kjellmann to Norway we secured 113 Lapp, Norwegian, and Finn men, women, and children, who were removed to the Eaton Station, from which they are to be distributed to various localities where most needed.

At the closing of this report it has not been determined how many of them will remain in the service of this Bureau and how many will go into the postal service of the country.

Apprentices.—During the year three of the apprentices, namely, Tautook, Sekeoglook, and Wocksock, of the Teller Reindeer Station, have gone into business for themselves, having served as apprentices for five years (the full term), locating their herd in the neighborhood of the Teller Station. Electoona and Ahlook, from Point Hope, and Ojello, from Point Barrow, with their families, were sent to Points Hope and Barrow to take charge of the herd driven up for

the relief of the whalers, or of such portion as was not slaughtered for that purpose. To assist the Eskimo apprentices, Jacob Larsen Hatta, wife, and two children, and Mr. Lars Larsen Hatta (Lapps) were also sent.

This herd was to be divided into two equal portions, one of which was to be loaned to the Presbyterian Mission at Point Barrow, and the other to the Episcopal Mission at Point Hope. Ten of the former Eskimo apprentices have now herds of their own and are careful and diligent in increasing them. Their herds aggregate nearly 500 head.

BUILDINGS.

The Rev. T. L. Brevig, who arrived at the Teller Reindeer Station in 1894 as teacher, needing a year's vacation, returned to the States last fall. The care of the public buildings thus vacated was given to Dr. Brandon, who in return for the same agreed to care for the buildings and also counsel with the Eskimo herders in the neighborhood.

At Eaton Station substantial log buildings were erected for the superintendent, physician, and herders' families; also for the necessary storehouses.

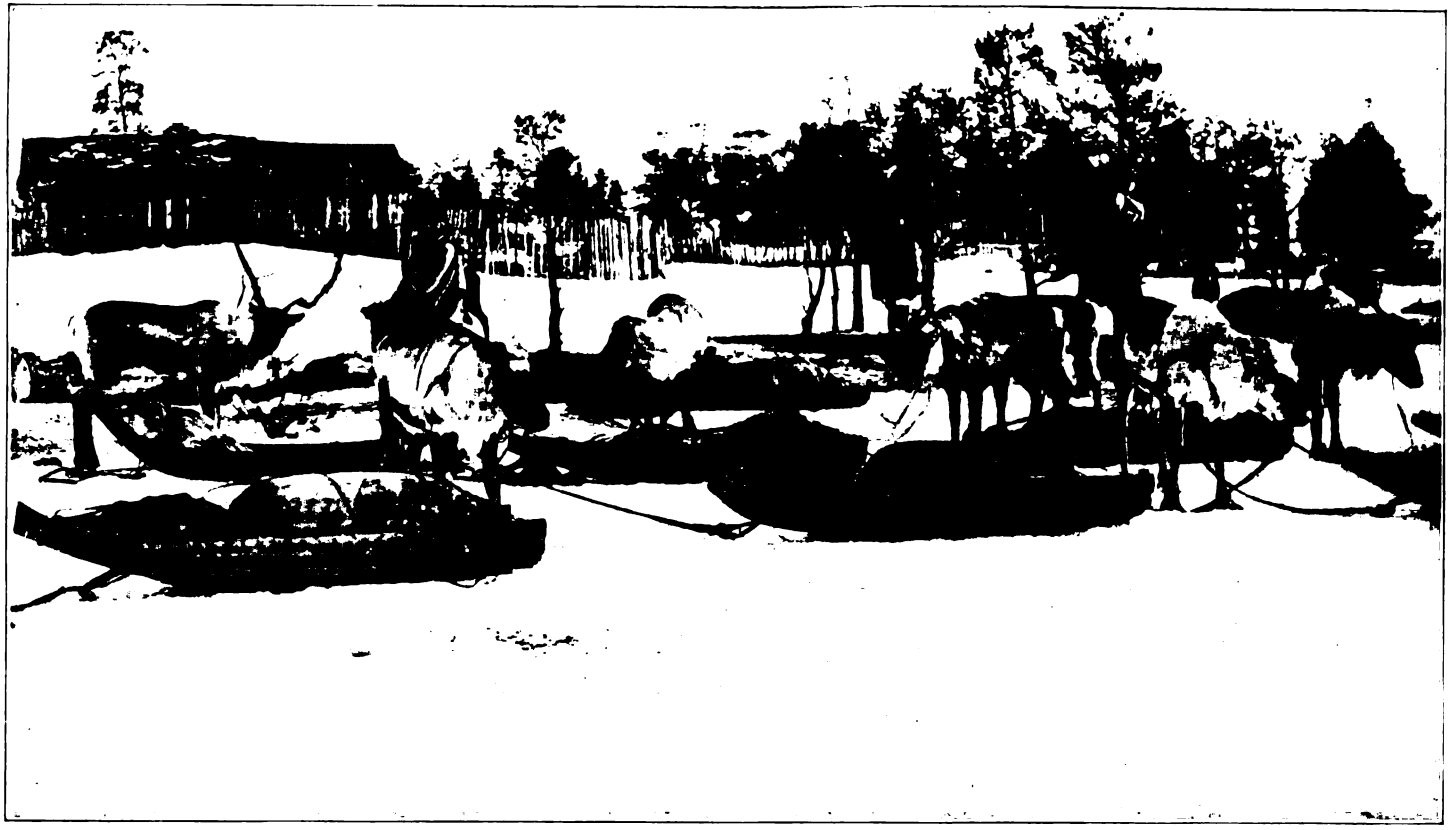
THE HERD.

The Government herd was driven during the winter from the Teller to the Eaton Station, a distance of about 300 miles.

The 120 reindeer that had been loaned by the Government to Antisarlook in January, 1895, were returned by him last winter, he retaining 160, the same being the increase during the three years that the herd had been in his possession. Seventy-five deer were given by the Government to Tautook, Sekeoglook, and Wocksock, who had finished their term of apprenticeship, and in accordance with the terms of their contract, to enable them to commence an independent herd. One hundred and sixty deer belonging to Antisarlook's herd at Cape Nome and 301 deer belonging to the missionary and Eskimo herd at Cape Prince of Wales were borrowed by the Government, making a total of 461 reindeer for the relief of the ice-imprisoned whalers at Point Barrow. Of these, 260 males were slaughtered for food, the females being kept as a nucleus of a permanent herd at Point Barrow.

At Golovin Bay the union herd, belonging jointly to the Swedish Evangelical Union Mission and Episcopalians, was increased during the year by 99 fawns born. It is expected this winter that the herd will be divided, and the portion belonging to the Episcopalians will be driven across the country to Weare, at the mouth of the Tanana River.

Instructions were left at the Eaton Station to loan 100 head of reindeer to the Roman Catholic missions on the Yukon River, and send with the herd an experienced Lapp to take the oversight of the herd and instruct the native apprentices in its care and management.



TRAVELING WITH REINDEER.

HERD OF REINDEER BY THE SEASIDE.

Number and distribution of domestic reindeer in Alaska, 1898.

Location of herds.	Old deer.	Fawns.	Total.
Unalaklik:			
Government herd, Eaton Station	446	177	623
Electoona (apprentice)	7	4	11
Martin (apprentice)	16	10	26
Ahlook (apprentice)	7	4	11
Teller Reindeer Station:			
Government property	7	4	11
Tautook (former apprentice), Government herd	38	39	77
Sekeaglook (former apprentice), Government herd	32	27	59
Wocksock (former apprentice), Government herd	28	22	50
Cape Prince of Wales:			
Congregational Mission Station	216	.....	216
Golovin Bay:			
Swedish Mission	101	49	150
Episcopal Mission	100	50	150
Okitkon (apprentice)	15	7	22
Tatpan (apprentice)	18	9	27
Moses (apprentice)	30	12	42
Constantine (apprentice)	2	2	4
Point Hope	29	19	48
Point Barrow:			
Presbyterian Mission	201	190	391
Circle City:			
Imported from Lapland	144	.....	144
Total	1,437	625	2,062

Increase from 1892 to 1898.

	1892.	1893.	1894.	1895.	1896.	1897.	1898.
Total from previous year	.....	143	323	492	743	1,000	1,132
Fawns surviving	.....	79	145	276	357	466	625
Purchased during summer	171	124	120	123	.....	.....	161
Imported from Lapland	.....	.....	.....	.....	.....	.....	144
Total, October 1	171	346	588	891	1,100	1,466	2,062
Loss	28	23	96	148	100	*a* 334	.....
Carried forward	143	323	492	743	1,000	1,132	.....

a One hundred and eighty deer killed at Point Barrow for food; 66 lost or killed en route.

Of the above, the following are the property of the Government: At Unalaklik, 623; at Teller Station, 11; at Golovin Bay, 100; at Point Barrow, 118; at Point Hope, 48; at Circle City, 144, making a total of 1,044.

Expenditure of reindeer fund, 1897–98.

Amount appropriated	$12,500.00
Supplies for stations	2,235.51
Barter goods for purchase of deer	4,378.17
Salaries of purchasing agents and herders	2,976.32
Freight on supplies and barter goods	2,497.13
Reprinting of report, 1,000 copies, at 29.9 cents	299.01
Copies of 38 electrotype illustrations, at 94.8 cents	36.00
Traveling expenses	75.00
Balance	2.86
	12,500.00

PURCHASING STATION IN SIBERIA.

From the commencement of the introduction of reindeer into Alaska in 1892 it has been my constant study to devise some method for procuring larger numbers of reindeer during the season. During the

experimental trip of 1891 two months were spent on the revenue cutter *Bear* in procuring 16 head. The following year 167 were secured, being the largest number purchased within any one year in Siberia. During 1893, 1894, and 1895 the very best that we were able to accomplish in a season was the purchase of from 120 to 125 head. In 1896 a partial agreement was effected with a private party to procure and bring over from Siberia to Alaska reindeer at a fixed price per head, which resulted in a total failure, not one being secured. In 1897, in continuation of the policy of trying different methods for procuring the reindeer, Mr. John W. Kelly, Mr. Conrad Siem, and Mr. A. St. Leger were sent to Siberia to remain during the winter. A small cheap frame house was erected and they were furnished with necessary barter goods required for the purchase of reindeer. During the fall their success was such as to encourage the hope that a practicable method had been found of procuring the reindeer in large numbers, several hundred of the deer being purchased and either delivered or placed in herds where they could be reached the following summer, during the few weeks that the ice allows the access of ships to the coast, when a vessel would be sent to transport them to Alaska. It appears, however, from the statements of the purchasing agents that during the winter jealousies and feuds broke out among the different native villages which precluded any further trading and so endangered their lives that the following July they felt compelled to go on board a whaler and leave the station.

Upon my visit to the place early in August I was able to trace and secure but 100 head of the several hundred which had been bought. After the employees had abandoned the station the natives seemed to have appropriated whatever they could lay their hands on, including the deer in the herd. Under the circumstances it was not thought expedient to carry this experiment further, and the station was closed. It is probable that the next method will be to try and arrange with some Siberian firm of standing and character to purchase deer for the Government. Possibly Russians will succeed better in bartering with the natives for deer than Americans. The 161 head of reindeer which I brought from Siberia in August were turned over to Mr. W. T. Lopp to replace in part those that the Government had borrowed for the Point Barrow relief expedition.

PRIVATE REINDEER ENTERPRISES.

The sudden influx of large numbers of miners into central Alaska, and the difficulty of procuring supplies and provisions at the mining camps, called public attention to the necessity of introducing the reindeer as a factor in freighting and transportation. During the years when the natives had occasion to travel from village to village their journeys were comparatively short and time was no object, consequently it made no difference whether they were a week or a month on the road, and dog teams served a useful purpose. So during the

days of the fur trade the few fur traders in the country with their homes on the river, supplied with provisions by an annual trip of a steamer, could manage to get along comfortably with dog transportation. But in the increased and more rapid development of the country the need of better transportation facilities was recognized. The experiments of the Government had already demonstrated the value of the reindeer, and three or four private enterprises were at once started, the details of which have been difficult to obtain. From newspaper reports I glean that a Mr. G. Lewis, of Montreal, acting in the interest of the Reindeer Transportation Company of Vancouver, shipped 42 reindeer from Norway on the steamship *Hecla*, reaching New York February 1, 1898. They were consigned to a Mr. J. G. Scroggs. Seven died on the trip across the ocean, and 29 in crossing the continent. But 6 lived to reach Skagway, and of those but 2 reached Dawson.

At Skagway I was informed that in November last Mr. David O'Neil, an Arizona miner, before going into the Yukon, visited Norway to procure a herd of reindeer for use at the mines. Not finding in eastern Lapland as large deer as he wanted, he continued up the coast to Tromsoe, then traveled into the interior across Norway and Sweden to Archangel, Russia, on the White Sea; from thence 480 miles northeast to Petchora Bay, Arctic Russia, where he is said to have found reindeer weighing from 500 to 600 pounds, trained both to hauling and packing. He purchased a herd of 2,000 head, costing about $12 apiece. With 34 selected deer he started for Hamburg, Germany, a journey of 1,800 miles across the country. Twenty-three days were consumed in crossing the Atlantic, during which time a number of them died; others died in crossing the continent, so that when Skagway was reached only 1 deer out of the 34 was left, and that one died before he could be gotten off the wharf.

The poor success in transporting the 34 deer so discouraged him that he telegraphed to Russia to sell the remainder of the 2,000 that he had purchased. It is to be regretted that these enterprises were not more successful, as the deer are so greatly needed in Alaska. The failure, however, was not due to any insuperable difficulties in the way of transporting them from Lapland or to any inability of the reindeer to endure long voyages, as was proven when, a month later than Mr. O'Neil's expedition, the United States commission to Lapland transported 539 reindeer from Lapland, twenty-six days at sea and across the continent to Seattle, with the loss of but one.

I have been informed that in the above private expeditions sufficient moss was not brought with the deer, but an attempt was made to accustom them to live on hay and grain while en route.

NO DOMESTIC REINDEER IN CANADA.

Last winter, while the Government and private parties were looking to Lapland for reindeer, a report was started and found credence in

some quarters that it was unnecessary to go to Lapland as the reindeer could be purchased better in Canada. Not having heard that there were any domestic reindeer in Canada, a letter was addressed to the Hon. George M. Dawson, LL. D., director of the geological survey of Canada, which elicited the following reply:

GEOLOGICAL SURVEY OF CANADA,
Ottawa, May 21, 1898.

MY DEAR SIR: I have your note of May 17, asking about supposed settlement of Lapps and domesticated reindeer in the vicinity of Hudson Bay. The report which has reached you is, however, quite erroneous, as nothing of the kind exists either there or on the Labrador coast, not even in connection with the Moravian missions of the last-named locality.

I am much obliged for the copy of your interesting report on the reindeer, duly received.

Yours, truly,

GEORGE M. DAWSON.

Rev. SHELDON JACKSON,
Alaskan Division, Bureau of Education,
Washington, D. C., U. S. A.

HOW REINDEER WILL SUPPLEMENT THE STEAMBOAT AND RAILROAD IN ALASKA.

The following quotation, which is a clear and concise statement of the value and extent of reindeer transportation, is from a circular prepared by Hon. W. T. Harris, Commissioner of Education. Dr. Harris writes:

Whatever may be the development of transportation by river or by railroad in Alaska, the reindeer will prove a useful auxiliary by rendering possible a ready distribution, even for long distances from the terminus. For instance, the steamers that visit the upper Yukon unload their goods at the terminal points. From these terminal points in the winter the reindeer can convey provisions and other supplies to the miners 20, 40, or 100 miles or more, as the case may be. If a railroad should be made from Skagway, or from Prince William Sound, or any other point, into the interior, at its terminal point various reindeer expresses make possible the distribution of the freight from the railroad to distant points in various directions from the terminus. They would likewise collect freight for the terminus. Meanwhile the reindeer can not be used as a substitute for the river or the railroad in the carrying of freight, any more than horses or oxen can be used for that purpose, because, while the amount of freight carried by the reindeer in the winter time is considerable, it would take 10,000 reindeer to carry 1,000 tons, while one freight train or one large steamboat might carry the entire amount. It is in the distribution from terminal points and the collection for terminal points that the reindeer will be useful.

Another point of great usefulness is the light work of carrying the mail. Great speed for small loads is the favorable condition. With relays of 25 miles each the possible speed in winter time of reindeer expresses, carrying a light load of mail, is 200 miles a day. If a route can be found, such as the Dalton trail is said to be, from Haines to Fort Selkirk or Circle City, the relays of reindeer could carry the mail in three days to Dawson City and in four days to Circle City. Return mail should be brought back in the same period. Supposing a railroad should be built to Dawson City or Circle City, the reindeer would not be useful in traversing the country over which the railroad passed, but he would be very useful in connecting the terminus of the railroad in the winter time with places down the Yukon River. Even the military camp at Weare, near the mouth of the Tanana, could

PUBLIC SCHOOL NO. 2 (NATIVE), JUNEAU, ALASKA.
Photograph by V. C. Gambell.

PRESBYTERIAN MISSION HOME, JUNEAU, ALASKA.
Photograph by V. C. Gambell.

RESIDENCE OF THE PHYSICIAN AT EATON REINDEER STATION, ALASKA.
Photograph by F. H. Gambell, M. D. (See page 12.)

METHODIST MISSION HOME, UNALASKA, ALASKA.
Photograph by S. J. Call, M. D.

be brought into communication with the War Department by reindeer express to Circle City, taking two days for round trip, and from the military camp near the mouth of the Tanana once a month to Point Barrow, requiring four days out and four days back, would keep the whole country in possession of the news regarding the fate of sailors caught in the Arctic seas and the missionaries who live in that remote region. A similar four-days express twice a month would bring the same news from Cape Prince of Wales and the missionary stations north and east of that point, and also those on the lines south and west and those on the Yukon. Another one three days out from the new military post at Weare would give the same information regarding St. Michael and numerous missionary posts south and southeast of that point. During the summer time the boats on the Yukon will bring the great bulk of freight up to the different distributing points.

ESTIMATES AND SUGGESTIONS FOR DISTRIBUTING REINDEER IN ALASKA, AND INDUCEMENT FOR LAPLANDERS TO BECOME SETTLERS AND HERD OWNERS.

The Lapps brought over from Lapland as teachers for the Eskimo apprentices, and also as the basis of the reindeer development in Alaska, are inquiring in what way they, as well as the Eskimo, can secure herds of their own. From the commencement of the instruction of the native men in the management of reindeer, the Bureau of Education has recognized the importance of securing the cooperation of the various missionary societies at work in Arctic and sub-Arctic Alaska.

Again I quote the Commissioner of Education:

It is evident that the missionary stations furnish the only safe centers for the location of herds and the establishment of schools of instruction in the rearing of the reindeer and in the training of them to harness.

As already mentioned, the missions ascertain the capable and teachable youth among the natives. They are able at any time to furnish a list of the natives in their vicinities noted for good character. At each of these stations 20 or 30 youth, selected from a village population of 300 or more, can be put in training as herdsmen and teamsters. No matter how large the Government appropriation should be, therefore, it would be necessary to connect the reindeer instruction and the establishment of permanent herds in northwest Alaska with these missionary stations.

Let small herds be loaned to each missionary station as a Government aid in the nature of an outfit of industrial apparatus. The report of the Indian Bureau shows that the United States Government furnished 10,000 head of stock for the period of 1890–96 for one Indian agency (the Blackfeet), and that seeds, implements, stock, wagons, harness, in large amounts, have been furnished to other agencies. These donations are certainly more justifiable than donations made to prevent the savage peoples from starving, for they are given, in the form of apparatus, for the instruction of these peoples in the industrial arts and in the practice of thrift. All these things prevent starvation. Just as in the agricultural colleges of the several States the Government money is used to pay for the stock of the model farm, which is used as the apparatus for the instruction of the pupils, so the reindeer herd is used as apparatus loaned to the missionary stations for the purpose of instruction of the natives. But an average of five years' apprenticeship is needed for the full training of apprentices in the management of reindeer.

Persons who have been brought up to the care of neat cattle and horses or sheep only have not thereby acquired the art of managing reindeer, for this requires

special apprenticeship. With the first herd (that of 1892) Siberian herdsmen were procured to give instruction in these arts; but the degree of success was so small that in 1894 five families of Laplanders were obtained to take their place. The Laplanders, being a civilized people and devoid of the superstitions which embarrass the Siberian natives, have attained a higher degree of skill in the management of this animal, and also show greater ability in teaching others what they know. Next after the obtaining of the reindeer the most important point, therefore, is the procurement of skilled herdsmen and teamsters from Norway and Sweden. It is of little use to give a herd of reindeer to a missionary station unless a skilled teacher goes with it.

The furnishing of the properly trained Laplander is one of the chief items of expense in the introduction of reindeer into northwestern Alaska. A salary of $500 a year is necessary for each, and the distribution of the herd at the different points on the seacoast and in the interior is possible only in so far as the Government is able to send these experienced herdsmen and teamsters. In the course of eight or ten years there will grow up a supply of thoroughly educated natives, who will render it unnecessary to depend any longer upon Lapland and Finland for teachers. But it is hoped in the meanwhile that there will be some migration from Scandinavia of families of herdsmen and teamsters.

To best accomplish the above, I would respectfully recommend the following general plan, which embodies the suggestions made by Mr. William A. Kjellmann from his own personal experience in the work, both in Alaska and Lapland, in the latter of which he was born and brought up.

Loan each mission association 100 deer for five years on condition (1) that two Lapp families are kept in charge of the herd, the mission furnishing food, clothing, etc., and the Government paying the salaries for the Laplanders; (2) that at least four native men are kept and trained to the work; (3) that the mission receive 80 per cent of the net increase of the herd and the two Laplanders in charge 20 per cent, this 20 per cent to be held back by the Government in case the Laplanders should not become herders or teamsters; (4) that one of the Laplanders at each station occupied be appointed manager, so far as herding and breaking in and the movement of the herd is concerned, the Lapp manager to report yearly to the Government inspector on his visit about the increase and general condition, etc., the mission station also reporting to the inspector.

Estimate of increase from 100 deer in five years.

	Males.	Females.	Total.
Original number	20	80	100
First year's increase	36	36	72
Second year's increase	40	40	80
Third year's increase	60	56	116
Fourth year's increase	80	72	152
Fifth year's increase	104	104	208
Total	340	388	728
Losses during the period			50
Total left			678
Property of the Government			100
Net increase left			578
Eighty per cent goes to mission			462
Twenty per cent to Government or Lapps			116
			578

RELIEF OF THE WHALERS IMPRISONED IN THE ICE NEAR POINT BARROW.

While the relief of the whalers imprisoned in the ice at Point Barrow last winter was conducted under the auspices of the Treasury Department, yet as the principal means of relief were the reindeer herds taken from Prince of Wales and Cape Nome and driven over to Point Barrow, and as those herds were a part of the fruit of the work of the Interior Department in introducing domestic reindeer into Alaska, it seems proper that some account of that expedition should have a place in this report.

Through the courtesy of the Secretary of the Treasury and Capt. C. F. Shoemaker, chief of division of Revenue-Cutter Service, I have received copies of the original reports of the officers in command of the relief expedition. From these reports and from other reliable sources I have secured the following account of the situation of the whalers and their relief by the Government expedition in charge of Lieut. David H. Jarvis, of the Revenue-Cutter Service.

On the 8th of September, 1897, the steam whalers *Orca*, Capt. A. C. Sherman; *Jesse H. Freeman*, Captain Humphreys; *Belvedere*, Capt. M. B. V. Millard, and the schooner *Rosario*, Capt. Edwin Coffin, were caught in the slush ice to the eastward of Point Barrow, the northernmost point of the North American Continent.

Early on the morning of the 9th the danger was so great that the captains of the four ships had a consultation as to the best method of working their vessels out of the ice. The young ice was forming fast and a heavy ridge of old ice remained along the coast. The only method of escape seemed to be by blasting a canal through the ice ridge, a distance of about a mile and a half. A portion of the crew was at once set at work making cartridges, weighing 5 pounds each, of blasting powder, gunpowder, and tonite powder, the latter of which was taken from the darting and shoulder bombs. These cartridges were placed on the ends of long poles, shoved under the ice, and exploded. A thousand pounds of powder were used and three days and nights consumed in making the canal. The remaining men of the crews were employed in sawing and poling the ice out of the canal. The fresh ice, however, formed so rapidly that the steamer *Orca*, in forcing its way through the canal, broke its rudder, and, becoming unmanageable, was taken in tow by the steamer *Freeman*. The captain of the schooner *Rosario* was afraid to attempt the passage through the canal, and hoped that the ice might open and afford the vessel a safe refuge in a lagoon near by. This hope, however, was not realized.

After getting through the canal the three steamers lay to until the *Orca* had repaired its rudder, and then steamed south 45 miles through increasingly heavy ice to the neighborhood of Sea Horse Islands, which were reached September 22. On that date the steamer *Orca*, which was in the lead during the breaking and forcing of the ice, was caught

between two immense ice floes, which wrenched the sternpost and steering gear completely out of place and hurled the wheel through the pilot house, the officers and crew taking to the ice for safety. Many of the officers and crew passed over the ice to the steamer *Freeman*. Shortly after the *Freeman* herself was caught in the ice jam and all on board took refuge on the ice. The steamer *Belvedere*, which had reached open water, immediately steamed back into the ice and rescued the officers and crew of both vessels. The wind blowing a gale from the westward forced both the young and old ice landward, and nothing was left for the *Belvedere* but to move with it, doing which the ship succeeded in getting into Pearl Bay, the heavy ice grounding outside and making a refuge behind it.

The *Belvedere* now had its own crew of 45 men, the 43 men from the *Orca*, and the 49 from the *Freeman*. Abandoning all hope of getting out of the ice, on the 23d of September the sailors commenced sledding provisions from the ship over the ice to the Sea Horse Islands, a distance of 3 miles. The water was pumped out of the casks to lighten the ship, and the bulkheads were torn down for the purpose of making houses on shore. The blacksmith commenced making cooking stoves from the coal-oil drums, and others were set to work cutting a canal through the ice to enable the ship to get in behind the islands for greater safety, all the arrangements being made to winter at that spot. While these arrangements for camping on shore were going on, Mr. Charles H. Walker, fifth mate of the steam whaler *Orca*, volunteered, with a couple of natives, to go across the ice to the steamer *Orca* and save all the provisions they could, agreeing to make a signal upon his safe arrival at the vessel. The *Orca* was lying 12 miles away, with the ice between the two ships full of holes and the pressure of the heavy ice constantly making large cracks in the new ice.

On the 29th of September, failing to see any signals from the *Orca*, Mr. George F. Tilton, with four natives, was sent to learn the fate of Mr. Walker and his companions. After six hours hard work the ship was reached and Mr. Walker and his men were found well and busy saving provisions. The ship was nearly full of water, and the provisions had to be fished out with long-handled bow hooks. In the meantime both ship and ice were drifting all the time. While engaged in securing the provisions a peculiar tremor was felt, the ship careened slowly over on its side and gradually slid under the ice floe and was soon completely hidden from sight. The men, having escaped to the ice, at once commenced sledding the provisions they had saved to the south sand spit of the Sea Horse Islands, which were about 3 miles to the westward. The moving of the provisions consumed two days. Some Eskimo were secured in the neighborhood with two teams of dogs, and on the sixth day all the food saved from the *Orca* was safely put on the steamer *Belvedere*. While the work of saving provisions from the steamer *Orca* was going on, some Eskimos boarded the steamer *Freeman* to help themselves to the provisions

MIDNIGHT SUN, POINT BARROW, ALASKA.
Photograph by Assistant Engineer H. N. Wood.

WRECKED WHALERS DRAWING SUPPLIES ON THE ICE, POINT BARROW.
Photograph by Assistant Engineer H. N. Wood. (See page 20.)

which had been left in that vessel when the sailors took to the ice. While engaged in looting the ship they accidentally dropped a lighted lamp, which set fire to the vessel, and it burned to the water's edge.

On the 3d of October Captains Millard, Porter, and Sherman after consultation determined to send to Point Barrow for help. Stephen Cottle, second mate of the *Belvedere*, and the four or five men of the steamer *Freeman* volunteered to go. It was a trip of 65 miles on foot, and it took three nights and two days to make it.

Mr. Charles D. Brower, superintendent of the Liebes Whaling Station, at once dispatched his assistant, Alfred Hopson, with six dog teams to the rescue of the whalers, arriving at the steamer *Belvedere* on October 7. Forty men with provisions were immediately sent to Point Barrow, some of the men being so sick and feeble that they had to ride the entire distance. The trip was made in four days.

Returning to the *Belvedere* on October 13, Mr. Hopson made the trip in twenty-two hours. On the second trip he took 64 men and some provisions to Point Barrow. On the 15th of October the captains reached Point Barrow for a consultation.

Inventories of all the provisions on the *Belvedere*, at Point Barrow, and on the four whalers which were in the ice to the eastward of Point Barrow were made and placed before them. These were carefully gone over, and it was decided that by allowing each man two scant meals a day the provisions could be made to hold out until the 1st of July following. At Point Barrow the officers of the first-named vessels learned that the steamers *Fearless*, Capt. James McKenna, and *Newport*, Capt. G. B. Leabett, were in heavy ice, 5 miles off shore, and about 60 miles to the eastward of the point. The steam tender *Jeanie*, Capt. P. H. Mason, was about 75 miles east of the point, and the bark *Wanderer* was about 360 miles east of the point, being within 90 miles of Herschel Island.

During the conference at Point Barrow it was decided to make an effort to send word to San Francisco, and volunteers were called for. Mr. George F. Tilton, third mate of the steam whaler *Belvedere*, and Mr. Charles F. Walker, fifth mate of the steam whaler *Orca*, were accepted for the trip. After every provision was made for their comfort, at noon on October 22, both expeditions left for the States, Mr. Tilton following the coast south of St. Michael and Shelikoff Straits, and Mr. Walker by the way of Herschel Island and up the Mackenzie River by way of the Hudson Bay Fur Company's posts to Edmonton, on the Canadian Pacific Railway, from whence he reached civilization.

Mr. Tilton was accompanied by two Eskimo runners, who had agreed to accompany him as far as Point Hope, which place they expected to reach in about fifteen days. It was on the 3d of January, when between Unalaklik and St. Michael, on Norton Sound, that Mr. Tilton met Lieutenant Jarvis and party on their way north to relieve the whalers, the news of the disaster to the fleet having been previously

communicated to them. St. Michael was reached on January 6. Leaving St. Michael on the 16th, a trip of 320 miles, crossing mountain ranges, through a storm that destroyed some of their dogs, brought the party to Andreafski on the Yukon River. In the winter of 1897 William A. Kjellmann, superintendent of the Government reindeer stations, made the same trip over the same mountains in the same kind of a storm with reindeer without any loss.

Securing fresh dogs at Andreafski, the journey was continued 180 miles across the portage to the Kuskokwim River. At that point, needing a fresh team of dogs, the traders at the place asked Mr. Tilton $1,000 for them. This would have prevented any further progress of the expedition had not the Rev. John H. Kilbuck, Moravian missionary at that place, loaned Mr. Tilton 13 dogs, provided provisions, and accompanied him as guide for 350 miles on his way to the next Moravian station, which was at Carmel, on the Nushagak River, arriving there on the 22d of February. At this point Rev. John Schoechert, missionary, supplied a fresh team of dogs and accompanied him as guide to Katmai, on Shelikoff Strait, a distance of 400 miles. These unpaid services of the missionaries are instances of the ready help extended to people in similar extremity everywhere by the missionaries. At Katmai an old dory was secured and mended up, in which a passage was made across the dangerous Shelikoff Straits to Kadiak Island. From Kadiak Island passage was secured on the steamer *Albion*, reaching Portland, Oreg., April 8.

While these events were transpiring in the far North it began to be noised abroad that a portion of the whale fleet had been caught and imprisoned in the arctic ice.

On the 3d of November Captain Tilton, of the steam whaler *Alexander*, reached San Francisco and reported that eight whalers were fast in the ice east and west of Point Barrow, and not being provisioned for so long a stay, the crews were in danger of starvation. This news was confirmed on November 5 by the arrival of the whaling vessels *Jeannette*, *Karluk*, *Gayhead*, and *Alice Knowles*. The attention of the President was called to the danger of the whalers, and at a Cabinet meeting held on the 8th of November it was decided to send a relief party at once, and the revenue cutter *Bear*, that had just returned from its usual summer arctic cruise, was ordered to make the necessary preparations and proceed as soon as possible to Bering Sea. It was the purpose that the *Bear* should proceed north until it reached the ice and then land a party that should go to Point Barrow and take control of the whalers. As no practical plan could be devised to enable the relief party to take provisions with them, it was determined to borrow a herd of reindeer owned by the Eskimo at Cape Nome and a second herd owned by the American Missionary Association at Bering Straits. These reindeer were to be taken by the relief expedition to Point Barrow and, so far as needed, slaughtered for

food. The trip being one of great hardship and danger, the Department called for volunteers to man the ship, and finally selected the following officers: Capt. Francis Tuttle, in command of the *Bear;* First Lieuts. D. H. Jarvis and J. H. Brown; Second Lieuts. E. P. Bertholf, C. S. Cochrane, J. G. Berry, B. H. Camden, and H. G. Hamlet; Chief Engineer H. W. Spear; First Asst. Engineer H. N. Wood; Second Asst. Engineers H. R. Spencer and J. I. Bryan, and Surgs. S. J. Call and E. H. Woodruff. Lieutenants Jarvis and Bertholf and Dr. Call were designated for the overland trip. Lieutenant Jarvis, who had made eight trips into the Arctic Ocean and was acquainted with the native population along the whole coast, was placed in command.

On the 29th of November the *Bear*, bidding adieu to civilization, steamed out of the harbor of Port Townsend in a blinding snowstorm on its perilous voyage. After a rough passage Unalaska was reached, in a thick snowstorm, December 9. The extra supplies for the whalers that would not be needed until the following summer were sent ashore. Taking on coal and water at Dutch Harbor at 1.35 a. m. December 11, the *Bear* headed north into Bering Sea, in a storm of hail, rain, and snow, its objective point being Sledge Island, where it was hoped the overland party could be put ashore. On the morning of the 13th St. Lawrence Island was passed, but soon after the ship entered mush ice and a little later the floe ice, which was so rapidly solidifying under the influence of the severe cold that at 5 p. m., when within 75 miles of Sledge Island, fearing the vessel would become permanently fast in the ice, the effort to reach Sledge Island was given up and the vessel headed toward Nunivak Island, with a hope of being able to reach Cape Vancouver. This would increase the length of the overland journey 800 miles, but it seemed to be the only point where a landing could be made. Cape Vancouver came in sight on the morning of the 15th, but was surrounded with young ice as far as the eye could see from the crow's-nest of the ship. After working slowly through the ice until the middle of the afternoon, it was found that the village shown on the chart did not exist. It was rapidly growing dark, and just as the attempt was about to be given up for the day a village was dimly made out farther up the bay. On the morning of the 16th the ship got under way and made an anchorage near the village of Tununok. The local trader, Alexis Kalenin, and a party of natives were soon on board. They informed Lieutenant Jarvis that they expected to start soon themselves for St. Michael and would pilot his party. Accordingly arrangements were immediately made for landing the expedition and their supplies. This was accomplished with great difficulty, as the ice was running heavily between the ship and shore. Having landed the party, the *Bear* returned to Dutch Harbor, Unalaska, for the winter.

The expedition consisted of Lieutenants Jarvis and Bertholf, Dr. Call, and Mr. F. Koltchoff. The latter was engaged as a guide and to drive the dog teams. Upon reaching the house of the trader it was decided not to start for St. Michael until the 18th, the intervening time being employed in getting everything ready. The start was made early on Saturday morning, the 18th, with four teams and Alexis for guide.

On the evening of the 20th they arrived at Kiyiligamute. At that point, two of the dog teams having given out, the party was divided, Lieutenant Jarvis and Dr. Call pressing ahead, while Lieutenant Bertholf and Alexis and Koltchoff were to wait until they could get fresh teams. Lieutenant Jarvis reached Andreafski on the 24th and St. Michael on the 30th. The second party left on the 22d, and reached St. Michael on New Years' Day, two hours after Lieutenant Jarvis had left for the north. Before leaving Lieutenant Jarvis left instructions for Lieutenant Bertholf to proceed to the head of Norton Sound and transport the provisions across to Kotzebue Sound, while he and Dr. Call went to Cape Nome and Cape Prince of Wales to procure the herds of reindeer at those places. At St. Michael Mr. Koltchoff was discharged, and soon after engaged as guide for Mate Tilton on his return to the States. Great difficulty was met in procuring a sufficient number of sled dogs to enable the party to reach the reindeer. After many hardships, on January 10 Lieutenant Jarvis reached the Government herd en route between Port Clarence and Unalaklik. The next morning arrangements were completed and the party started with reindeer teams from the Government herd for Tsuynok, where Antisarlook and his friends had a herd of domestic deer. After refreshments and rest Lieutenant Jarvis commenced negotiating for the herd of reindeer at that point. The herd represented to the Eskimo the living of a whole village, and if the herd departed it might mean starvation to themselves before spring, so that there was much point as well as pathos in the answer of Antisarlook's wife when she said: "Tell Mr. Jarvis we are sorry for the people at Point Barrow and we want to help them, but we hate to see our deer go, because we are poor and our people in the village are poor, and in the winter when we can not get seals we kill a deer, and this helps us through the hard times. If we let our deer go, what are we to do? Antisarlook and I have not enough without them to live upon."

It seemed like reducing these people to starvation in order to save others, and in giving up their herd of deer for the sake of others it was like giving up their own lives; yet, after consultation among themselves, it was finally agreed to, and Antisarlook was employed to go with his herd. At this place were 138 deer, 22 belonging to the herders. In making the arrangements, as there were 100 cows, Antisarlook was allowed an increase of 85, so that it would require 220 deer to be delivered to him next year to make good the promise of

the United States Government to return him a herd of equal size, three having been killed for food for Antisarlook's family.

Having given Antisarlook's wife an order on neighboring stores for food supplies, and leaving Dr. Call to take charge of Antisarlook's herd and drive them up to the Teller Reindeer Station, Lieutenant Jarvis pushed forward to Cape Prince of Wales to get the second herd. While Dr. Call and his party were on their way to the Teller Station they encountered a blizzard so severe that the deer, blinded by the flying snow, turned and trampled over the drivers—however, without serious damage. They were compelled to retreat for three hours, when they found an old fishing hut and climbed in at the window. There they were held by the storm for three days, with only food sufficient for two days and a long trip still before them.

On the 25th they made another start, and reached the station on the 27th, just as a fresh blizzard was commencing. Lieutenant Jarvis reached Cape Prince of Wales on the 24th of January. On delivering to Mr. Lopp his mail, and explaining to him the necessity and object of the expedition, he had no difficulty in securing the herd of 301 deer at that place, with the agreement that 432 deer should be returned to them by the Government the following season. It was also agreed that Mr. Lopp and his herders should accompany the expedition, in charge of the reindeer. Arrangements had been made, and it was proposed that Mrs. Lopp and the children should go to the Teller Reindeer Station, from 60 to 75 miles distant, to remain with the Rev. and Mrs. Brevig; but the discomforts of the trip were so great, and she had such entire confidence in the affection of the Eskimos, that she concluded to remain at home, being with her children the only English-speaking persons in a community of 500 Eskimos.

On the 29th of January Dr. Call and party left the Teller Station and crossed the mountains, where they expected to form a junction with Lieutenant Jarvis and the reindeer herd from Cape Prince of Wales. The weather was thick and unpleasant, the barometer sinking rapidly, but, being in need of haste, the party pressed on through the storm and the mountains as best they could. Passing over the mountain range they were met by a storm so severe that they had to go into camp, and no sooner was the tent erected and covered with sleds to hold down the canvas, than it was drifted over with snow so deep that the following day it took them two hours to dig their way out. In the meantime the deer were scattered by the storm, and it was noon of February 1 before they were able to gather the herd together again. In the afternoon of February 2 a junction was made with Lieutenant Jarvis and the herd. The following day a start was made with 435 reindeer, of which 18 were broken to harness and reserved for transportation purposes.

On February 6 Lieutenant Jarvis and Dr. Call pushed on ahead for

Sineraget, a village on the coast, en route for Point Hope, leaving instructions for Mr. Lopp to follow with the herd and meet him at Pitmegea, just north of Cape Lisbon. The route lay along the northern part of Cape Prince of Wales peninsula, about 15 miles from the coast, where deer moss was plentiful, to Cape Espenburg.

On the 12th of February Lieutenant Jarvis and Dr. Call reached Cape Espenburg, and although the ice on Kotzebue Sound was broken and piled up in a manner to deter an effort to cross it, they concluded to make the attempt, and succeeded in crossing the sound to Cape Blossom, 50 miles away. Near Cape Blossom was the missionary station of the Friends, occupied by Mr. and Mrs. Robert Samms and Miss Hunnicutt. Here Lieutenant Jarvis met Lieutenant Bertholf, who had crossed from Norton Sound with 1,000 pounds of provisions, reaching the mission station on the 10th of February. After resting a few days Lieutenant Jarvis and Dr. Call left on the 15th for Point Hope, leaving Lieutenant Bertholf to await the arrival of Mr. Lopp and the herd and then to follow northward.

On February 16 Mr. Lopp, with the deer, reached Cape Espenburg and held a consultation with reference to the possibility of driving the deer and taking the sleds across the broken ice covering an arm of the Arctic Ocean from Cape Espenburg 40 miles to Cape Krusenstern. After much hesitation it was decided to make the attempt. During the first day the reindeer made 30 miles; in many places the attendants had to cut a road over hummocks of broken ice. The second day food gave out for the drivers, and of course there was no moss for the deer on the ice. The reindeer, remembering that they had left fields of moss behind them, continually broke loose to return over the ice. This made it very difficult driving, and they were out the second day and all the second night without food before reaching land again at Cape Krusenstern. There, receiving a letter from Lieutenant Jarvis, informing him that Lieutenant Bertholf with supplies was at Cape Blossom, Mr. Lopp, leaving the herd, went to meet Lieutenant Bertholf.

Loading the supplies on reindeer and dog teams, a start was made for the herd at Aneyok village, which was reached on the 19th. The deer having rested, a start was made on the 21st, following along the coast as far as the mouth of the Kevuleek River, where Mr. Lopp with the deer was to proceed inland, leaving Point Hope to the westward. Lieutenant Bertholf, taking a team, proceeded direct to Point Hope, reaching there on March 2. Finding a considerable store of provisions at Point Hope, Lieutenant Jarvis instructed Lieutenant Bertholf to remain there and take charge of any whalers that might be sent down during the winter. Lieutenant Jarvis and Dr. Call, having made all necessary arrangements at Point Hope, left on March 4 for Point Barrow. Lieutenant Jarvis had instructed Mr. Lopp to meet him at Petmegia, just north of Cape Lisbon. When Lieutenant Jarvis reached the place of meeting all that was visible above the snow was a wooden

cross with this inscription: "Letter between boards; arrived here March 7th; look out for the train." Just below the board, stuck in the snow, was a second board, on which was written: "Deer meat here."

On the 13th of March they reached the camp vacated by the herd that morning, and on another cross found a note reading: "Will try to find better moss on the inside of the lagoon. Leave here March 13." During the 14th a storm of unusual severity raged, thermometer registering 40 degrees below zero. The same storm continued through the 15th and was worse on the 16th. To add to the distress and danger of Lieutenant Jarvis, his dog teams had nothing to eat. About noon on the 17th a party of natives were discovered, who brought a note from Mr. Lopp stating that he had left there that morning, and soon after the herd was seen on the horizon, moving over the rolling white hills. Lieutenant Jarvis pushed his team ahead to overtake the deer 10 miles away. Arrangements were made to meet Mr. Lopp at Icy Cape. Arriving there on the 22d in a fearful storm nothing was seen of the herd, which during the storm had passed within a mile of the camp. On the next day a board was found with the message: "Arrived here 1 p. m. Tuesday, March 22. Think we are passing Icy Cape. Find meat in the mouth of the cache. Think sledge deer will hold out. Find better moss on the inside of the lagoon." This was welcome news to Lieutenant Jarvis, for it meant that he could save his dog teams from starvation.

At noon on March 26 Lieutenant Jarvis, looking over the ice, exclaimed: "There is the first of the imprisoned fleet!" as he caught sight of the tall mast of the *Belvedere*, 12 miles away.

Point Barrow was reached by Lieutenant Jarvis on March 29, and the herd of reindeer arrived on the 30th, safe and sound.

Thus successfully ended a trip of 2,000 miles through the desolations of an arctic wilderness in midwinter, over an unknown region, and among many wild tribes. The narrative of the trip is a story of bravery, good generalship, heroic endurance, and interpositions of Divine Providence—a trip only equaled by that of Mates Tilton and Walker, who went out with the news, and the return trip of Mr. Lopp to his home at Bering Straits.

Turning over the herd to Lieutenant Jarvis at Point Barrow, Mr. W. T. Lopp, taking a dog team, started on his return trip to his own home at Cape Prince of Wales. As provisions had been left for himself and the dogs in caches along the way, he was able to travel light. On his return trip he reached Point Hope April 19, left on the 23d, and reached Cape Prince of Wales on May 5, thus having, together with his herders, driven a herd of reindeer over the bad roads of snow and ice, through a country but little known, in the middle of winter, dragging all his provisions with him, a distance of 700 miles, and returning to his home the same distance, in the remarkably short time of three months and two days.

It has frequently been said during the efforts to introduce domestic reindeer into Alaska that the Eskimos could not be taught their care and management, and that they would never take to herding reindeer, but on this remarkable trip it must be remembered that the herders and drivers were all Eskimos who had learned their business as apprentices at the Government training station for reindeer, and that without this herd of reindeer food could not have been taken to the whalers, and without the trained Eskimo the reindeer could not have been driven across the country. This striking object lesson should forever set at rest the false assertion that the Eskimos will not take to the raising of reindeer if a chance is given them.

From Cape Prince of Wales to Point Barrow the expedition found abundant pasturage for the reindeer. It passed through numerous villages of natives, who were greatly interested in the herd of reindeer, not only as a matter of curiosity, but because they appreciated the benefit that a herd of domestic reindeer would be to them and their people. Wherever they went the natives questioned Lieutenant Jarvis with regard to the possibility of their securing some reindeer for themselves and their children. If the deer were to be had in sufficient numbers, hundreds of the Eskimo men would gladly serve an apprenticeship of five years in order to get a start in reindeer raising.

In this connection it is appropriate to call public attention to the influence of the mission schools in making arctic Alaska safe for the transit of white men. In 1890, when the Congregational Mission was established at Cape Prince of Wales, no whaler had dared drop anchor in the neighborhood of that village for ten years; and the placing of missionaries there was considered by the captains of the whalers as a foolhardy undertaking. The missionaries were placed there, and now ships can anchor and their crews go on shore with safety.

When, in 1881–1883, Lieutenant Ray, United States Army, was placed in charge of the international polar expedition at Point Barrow, a turret was built at one corner of his house and armed with cannon to protect his party from the natives. Now the Presbyterian Mission has so civilized the natives that no fortified habitation is necessary. Under the influence of the Presbyterian missionary the natives not only provided the shipwrecked sailors with food from their own scanty supply, but also with necessary fur clothing. The influence of the missions made possible Lieutenant Jarvis's heroic trip unarmed.

After the departure of Mr. George F. Tilton, October 22, to carry the news to the States, Dr. H. R. Marsh, Presbyterian missionary at Point Barrow; Mr. Charles D. Brower, agent of the Liebes Whaling Company, and Mr. McIlhenny, a scientist making an arctic collection, the three leading white residents of the point, immediately set themselves to provide for the welfare of the shipwrecked whalers that had been thrown upon their hands. Mr. Brower at once arranged to issue

REINDEER TEAMS FOR POINT BARROW EXPEDITION.
Photograph by S. J. Call, M. D. (See page 25.)

PRESBYTERIAN MISSION HOUSES, POINT BARROW, ALASKA, IN WHICH WERE SHELTERED WRECKED WHALERS.
Photograph by S. J. Call, M. D. (See page 30.)

DOCTOR AND MRS. H. RICHMOND MARSH, POINT BARROW.
Photograph by S. J. Call, M. D.

rations from his stores to the men; the Eskimos were sent into the surrounding country to get wild game, both for themselves and the suffering whalers; Dr. Marsh gave his time and medical services to saving the men from scurvy and other diseases that would otherwise have caused the loss of many lives; all the houses in the place were put at the disposal of the wrecked men, each one taking into his own home all that could be accommodated.

During the latter part of November, when it seemed that starvation awaited them, small herds of wild deer were seen on the rolling hills to the south of the village, a thing that had not been known for many years so that the natives were able to procure for the use of the community 12,604 pounds of deer meat, 8,692 pounds of fish, and 2,506 pounds of wild fowl, with some 2,500 to 3,000 pounds or more of meat in the country, which was afterwards brought in by the deer men and sledges, under the direction of Lieutenant Jarvis. Some of this meat was hauled a distance of 230 miles. This unusual and providential supply of deer meat doubtless kept the party alive until the arrival of Lieutenant Jarvis with his herd of domestic reindeer. During the remainder of the winter 180 deer were killed from the domestic herd.

On the 29th of July, 1897, the steam whaler *Navarch* was caught in the ice about 2 miles west of Point Barrow and carried by the ice pack to the northwestward. On August 3 the ship was abandoned, the crew taking to three boats, which were dragged for three days over the ice and then abandoned, each man taking such bread as he could carry. After going a little farther they met with open water, and were finally compelled to return to the ship, 18 miles distant.

On the 11th of August 29 of the crew deserted the vessel for the shore. On the evening of the eighth day from the ship coming to the pack they got upon a small cake of ice, which drifted them inshore for three days, and on the 22d of August they were seen and picked up by the steamer *Thrasher*, having had nothing to eat for eight days but ice and boot soles, only 16 of the 29 living to be rescued.

On the 14th of August Captain Whitesides and his wife and six of the crew left the vessel, dragging a small canvas canoe with them. After many dangers and great hardships they succeeded in reaching the shore, and three days later were discovered and picked up by the revenue cutter *Bear*. Nine of the vessel's crew refused to leave the whaler, deeming it safer to remain on board than to risk the journey over the ice; seven of these, however, later made the attempt to reach the shore and were saved. Two of the sailors refused to leave the vessel and have never been heard from. Very strangely, however, the *Navarch*, which had been caught in the ice in July and abandoned, after making a trip by itself into the far north drifted back into the neighborhood of Point Barrow four different times, the last time to within 2½ miles of the shore and was caught and held firmly by

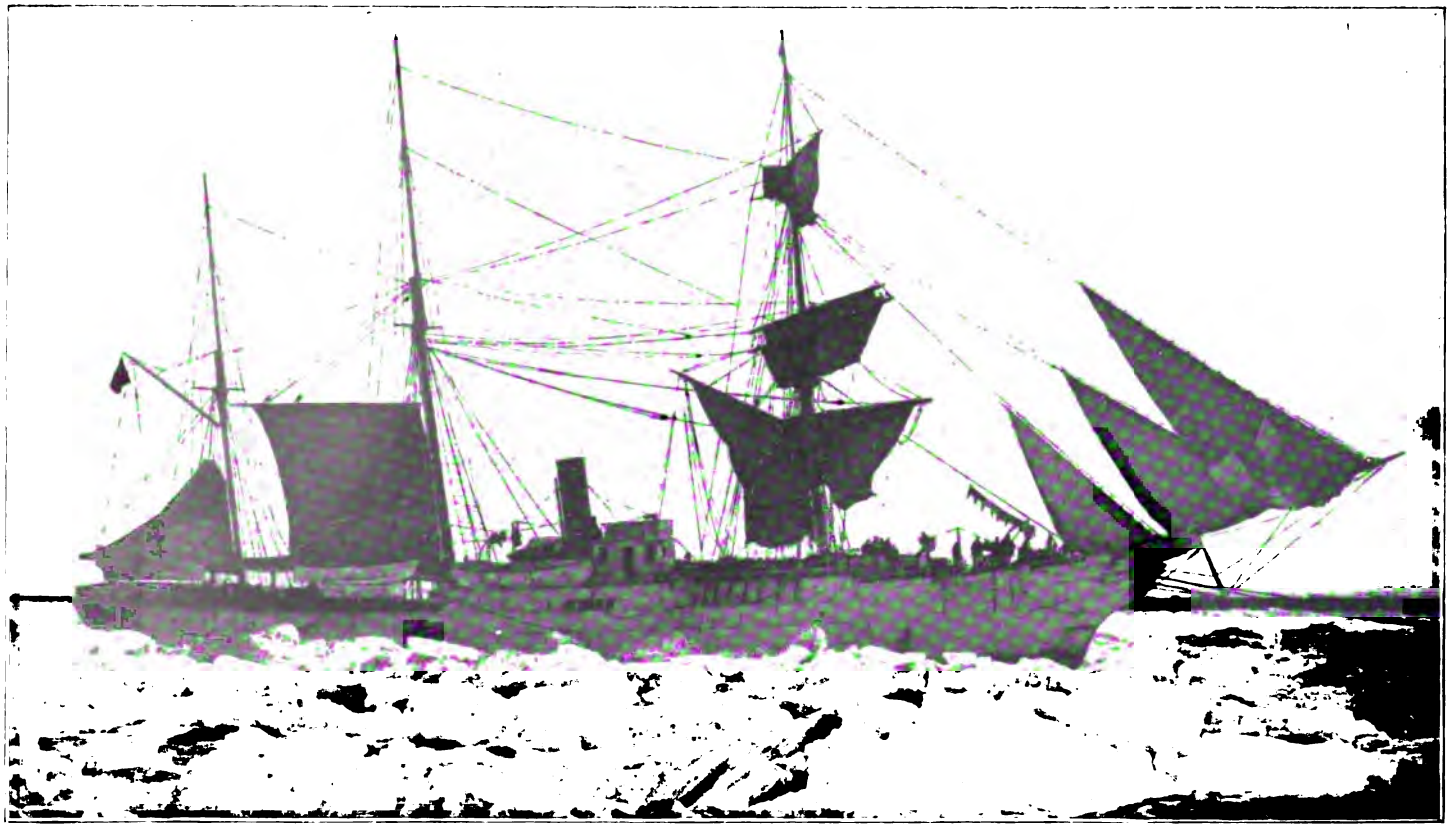
the ice. Each time that she approached the village, wrecking parties were sent across the ice to secure the coal and provisions which had been left on the steamer when she was abandoned six months previously. This coal was of the utmost service during the winter, as the driftwood along the shore had been used up and the coal supply was very short. After all the provisions and nearly all the coal had been removed, about 4 o'clock on the evening of September 3, the vessel was seen to be in flames and burned to the water's edge, the fire having been started by two of the sailors, who received their punishment later, when during the winter there was not fuel enough to keep them comfortable.

Upon his arrival Lieutenant Jarvis made a tour of inspection and found that there were 100 men quartered at the village, 76 of whom were crowded in the old building formerly occupied by the Pacific Steam Whaling Company. At the request of Lieutenant Jarvis, Dr. Marsh, Professor McIlhenny, and Mr. Brower consented to an increase of the number already quartered upon them; in the meantime a storeroom had been sufficiently emptied of provisions so that a number of them could be placed in that. This made them more comfortable. There being much suffering on account of scanty and insufficient clothing, Lieutenant Jarvis secured a large amount of fur clothing from the Eskimos, which was freely contributed from their stores for the use of the men. Lieutenant Jarvis took command of the station, issued rations, communicated with the various ships, sent out parties of native hunters, which brought in supplies of wild meat, and so controlled matters that when the *Bear* was finally able to reach the place and take off the men they were found in much more comfortable circumstances and healthier condition than could have been expected.

The schooner *Rosario*, after wintering safely, was crushed in the ice July 2. Captain Neuth, of the *Jeannette*, who was sick, was brought down on the *Bear*. A petty officer of the *Orca* had committed suicide by drowning early in the spring. In June Phil Mann, of the whaler *Jesse Freeman*, had dropped dead of heart failure. Gray, of the steamer *Jeanie*, had died of the dropsy. A Siberian and Japanese attached to the fleet had also died.

There being indications that the ice was breaking up in Bering Sea, the cutter *Bear* left its winter quarters at Unalaska and Dutch Harbor on the 14th of June, and sailed north for Point Barrow.

On the 19th, to the north of St. Lawrence Island, heavy ice was encountered, slowly working its way through which the ship reached St. Lawrence Bay, Siberia, on the 22d, and the following day reached Cape Prince of Wales, where an interview was had with the missionary, W. T. Lopp, who gave the captain a full account of the condition at Point Barrow while he was there. Learning that there was a scarcity of clothing among the whalers, Captain Tuttle turned back and steamed over to St. Michael, where a supply was laid in. Return-



CUTTER "BEAR" FAST IN THE ICE, POINT BARROW, ALASKA, AUGUST 3–17, 1898.
Photograph by Assistant Engineer H. N. Wood, R. C. S. (See Page 31.)

LIEUTENANT D. H. JARVIS, R. C. S., AT RELIEF STATION, POINT BARROW, ALASKA.
Photograph by S. J. Call, M. D. (See page 27.)

ing to Bering Straits and passing into the Arctic Ocean, Point Hope was reached July 15 and Point Lay on the evening of the 18th. Off Icy Cape the heavy drift ice prevented further progress northward and compelled the *Bear* to anchor off Point Lay. Another fruitless effort was made on the 22d, and also on the 23d, to force the vessel through the ice. On the 25th, the ice opening a little, an effort was made to reach Wainwright Inlet, but before doing so the fog shut down so thick as to compel the ship to anchor.

On the 27th another start was made, and by pushing through the heavy drift out to sea they were able to reach the station at Cape Smyth on the morning of the 28th. On the 29th 93 officers and sailors were taken on board.

While waiting for the crew of the *Rosario*, which was 8 miles away, the *Bear* was subjected to a terrible ice jam and nearly crushed. There was a high ridge of shore ice between the cutter and the shore, behind which, in open waters, the three whaling vessels—*Fearless*, *Newport*, and *Jeanie*—were safely at anchor, but all access to which was closed by the ice, so that the *Bear* could not get in. A strong southwester had set in, drifting the ice floes with great force against the *Bear*, which was caught between them and the ridge of shore ice, and the staunch vessel came near being cut to pieces. A sharp ledge of ice under water abreast the engine room pushed in the sides of the vessel until the floor of the engine room was bent up fully 6 inches. In this jam the cutter was kept for two weeks, until August 17, when it got out by blasting through two ship's lengths of ice.

Getting afloat, sufficient coal and provisions were given the whalers to enable them to reach other supplies, and the *Bear* started on its return to civilization. A stop was made at Point Hope on the 20th, where it was found that the schooner *Louise J. Kenney* had been forced on the beach by the ice on the previous day. Her officers and crew were taken on board.

After making several stops the *Bear* arrived at St. Michael on the 25th of August, and reached Seattle on the 13th of September, where a congratulatory telegram was received from the Secretary of the Treasury extending thanks to the officers and crew for the successful issue of the work of the overland expedition for the relief of the ice-bound whalers.

It remains for a grateful country, that rewarded the heroes of Manila and Santiago with promotions, to see that Lieutenant Jarvis be not forgotten. Had not the events of the Cuban war distracted the attention of the nation, this wonderful trip of 2,000 miles overland, north of the arctic circle in midwinter, would have filled the columns of the newspapers on this continent and in Europe. Because occurring at a time when other events claimed the attention of the public, it is no less deserving of its reward.

COMMISSION TO LAPLAND.

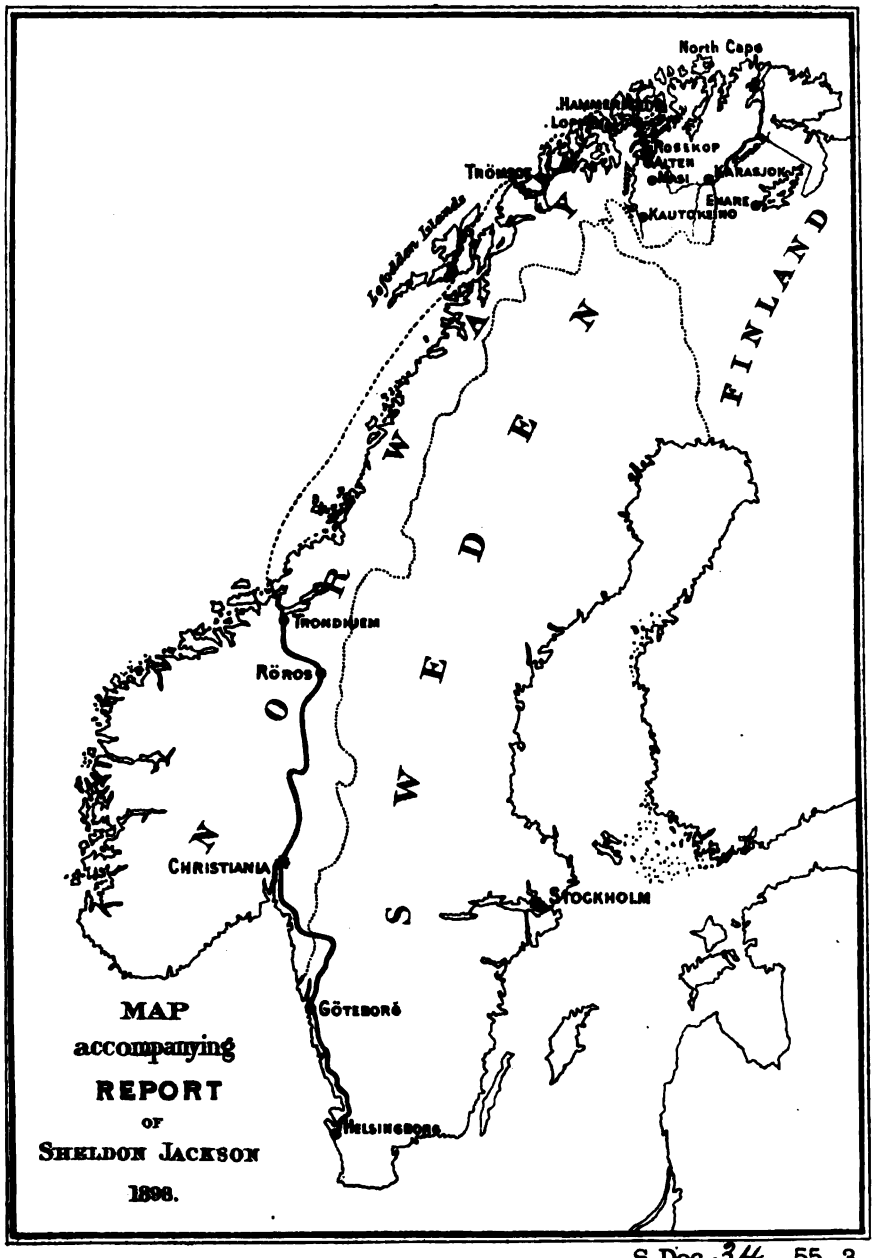
On the 23d of December, 1897, I was directed by the Secretary of the Interior to report to the Secretary of War for temporary duty in connection with the duties enjoined by the act of Congress approved the 18th of December, entitled "An act authorizing the Secretary of War, in his discretion, to purchase subsistence stores, supplies, and materials for the relief of people who are in the Yukon River country, to provide means for their transportation and distribution, and making an appropriation therefor;" and on the same date (December 23) I received written instructions from the Secretary of War to proceed at once to Norway and Sweden and purchase 500 reindeer, broken to harness, with sleds, harness, and drivers for hauling supplies into the Yukon Valley and transport the same to the United States.

Lieut. D. B. Devore, U. S. A., was appointed to accompany me as disbursing officer.

On the evening of the same day I left for New York, and on the following day held conferences with the managers of the several trans-Atlantic steamship companies centering in that city with reference to the transportation of the reindeer and Lapps to the United States.

In the spring of 1894, acting for the Bureau of Education, I had brought to the United States seven Lapp families to take charge of the domestic reindeer that the Government had commenced introducing into Alaska from Siberia and to teach the natives the management of the same. These families came under a three years' contract, at the expiration of which they were to be returned to Lapland, if they so desired. The limit having been reached last fall, four families asked to be returned to their homes, which was done, and Mr. William A. Kjellmann, superintendent of the reindeer stations in Alaska, was sent in charge of them, with the double purpose of not only conveying them safely to their native country, but also to procure a number of Lapps who would come to the United States with the expectation of making it their permanent home and engage in the raising and training of reindeer in Alaska. Consequently, when this unexpected demand of the Government for reindeer and Lapps arose, in accordance with the directions of the Secretary of War, I telegraphed Mr. Kjellmann from New York of the changed conditions, and instructed him to engage and send out all the assistants he could use to expedite the purchase of reindeer and the securing of Lapp colonists.

On the evening of December 24 Lieutenant Devore and myself took passage on the steamship *Lucania*, of the Cunard Line, and early Christmas morning were on our way to Liverpool, which we reached at noon December 31. Upon the arrival of the steamer we were met by representatives of the White Star Line, who wished to bid for the transportation of the reindeer. After a conference with them we took the train to London. On New Year's morning I received a telegram from Mr. William A. Kjellmann, agent of the Department of



MAP
accompanying
REPORT
OF
SHELDON JACKSON
1898.

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the Interior, who had reached Norway, asking for funds. This was in answer to the telegrams from the Secretary of War to proceed at once to purchase reindeer.

The Lapps, who alone have the reindeer for sale, are a semicivilized people, unaccustomed to commercial methods. They have no confidence in a "promise to pay." A would-be buyer must show his money, and at least make a partial payment at the time of purchase. Hence Mr. Kjellmann could accomplish but little until he had funds in hand.

Although it was New Year's Day, we found that the banks would be open during the forenoon, and Lieutenant Devore and myself proceeded to visit the leading bankers and telegraph companies of London, but, strangely, no one could suggest any method of getting money to Mr. Kjellmann sooner than by sending a check by mail. As there was a prospect of considerable delay in chartering a steamship, we decided in the afternoon that Lieutenant Devore should remain in London and secure a steamer and that I should push on to Lapland with money for Mr. Kjellmann.

January 3 I learned at the office of the Atlantic Transport Steamship Company that the department of agriculture of the English Government, to protect English cattle from the foot-rot which had broken out in southern Sweden among some of the cattle, had recently issued a circular forbidding the introduction into England of any stock from Norway and Sweden. Not only was stock of all kinds forbidden to land in England, but ships carrying such stock to other countries were to be quarantined twenty-one days before being allowed to load other cattle to return to England. As this threatened to greatly increase the expense and the difficulty of chartering a ship, I proceeded to the American embassy, where it was suggested that I visit the British department of agriculture and talk over the matter unofficially with the officer in charge and find out if any official action would be necessary. I found that the officer wanted was the first assistant secretary of agriculture. He took much interest in the proposal to procure reindeer to relieve the destitute miners in the Yukon, and suggested that we secure a steamer not engaged in the cattle trade and take the reindeer direct from Lapland to America, which suggestion was afterwards carried out.

Leaving London on the evening of January 3, I reached Christiania, Norway, on the morning of the 6th.

At 10 a. m. I presented the American consul, Mr. Henry Bordewich, of Minnesota, a letter from Secretary Sherman to American officials in Sweden, Norway, and Denmark, to render all possible aid in securing reindeer. In company with the consul, a call was made upon the secretary of the interior of the Norwegian Government, who gave me a circular letter to the Norwegian officials in Lapland requesting them to extend all assistance in the enterprise.

On the morning of January 7 I took the train for Trondhjem. After leaving Hamar the train crosses over from the vicinity of Lake Mjosen to the valley of the celebrated River Glommen, along whose winding banks it gradually ascends until the high mountain levels are reached in the neighborhood of Roros, on a dreary and inclement plateau, 2,060 feet above the water. This is a famous region for reindeer moss.

At midnight I reached Trondhjem, and taking an omnibus was soon settled at the Grand Hotel. On January 8, as soon as the banks were opened, I made a deposit of $1,000 for Mr. Kjellmann, which was telegraphed to Alten, Lapland, to his credit.

Owing to its nearness and accessibility by rail with the mountain plateaus, Trondhjem is one of the best markets in Norway for procuring reindeer moss. A few weeks previous Mr. Kjellmann, while en route to Lapland, visited the traders and farmers in the neighborhood and arranged for several hundred tons of moss to be delivered at Trondhjem. I now completed that purchase of moss, and arranged with Mr. E. A. Tonseth's commission house for its reception and shipment upon the steamer that was to be chartered to carry the reindeer and which would call at that harbor for the moss.

At midnight, upon the arrival of the train and mail from Christiania, the steamer *Vesteraalen* sailed for Tromsoe.

At 5 a. m. January 11 I reached Tromsoe, and, transferring from the steamer *Vesteraalen* to that of the *Sigurd Jarl*, at 7 a. m. the steamer was on its way to Hammerfest, which place we expected to reach the same evening, but the sea was so rough and the snow squalls so blinding that we did not get there until 2 o'clock the following day.

About 2 o'clock in the afternoon of January 12 we dropped anchor in the harbor of Hammerfest, the most northern city in the world. At this season of the year the sun is not visible from November 18 to January 23. The city is lighted with electric lights. It carries on a busy trade with Russia and also with Spitzbergen.

As soon as the ship dropped anchor I was transferred by rowboat directly to the steamer *Nor*. This was one of the small steamers which makes side trips up the fiords, the special route of the *Nor* being the Alten Fiord, at the head of which lies the village of Bosekop, which was my destination.

Soon after my arrival I was handed a number of telegrams with reference to the work in hand.

On Sunday morning, January 16, Mr. Kjellmann arrived from the interior, having been delayed two days on the mountains, where he was lost in a blizzard, riding nearly all Friday and Saturday nights and the intervening day without sleep. He reported the welcome information that the 500 trained reindeer that had been ordered, together with sleds, harness, and 50 drivers, had been secured. He had sailed from New York December 1, 1897, and reached Bosekop, Lapland, on the 23d.

While passing through Washington, November 30, he had a conference with the Commissioner of Education and the general agent of education for Alaska, at which time he was informed that possibly Congress would make an appropriation for the relief of the miners in the Yukon Valley, and if so he might be called upon to purchase reindeer and procure drivers for the same; in view of which he was directed while en route to make such inquiries that if telegraphed to procure deer he could do so with but little delay. Therefore, on his arrival, December 12, at Aalesund, the first port reached in Norway, he telegraphed to various centers where it was thought reindeer moss could be had in quantity, the replies to be sent to him at Trondhjem, which place he reached the next day. Arriving at Trondhjem, he found that the only place where the moss could be had in abundance was at Roros. Accordingly, on the 14th he took the train to Roros, and on the 15th went around among the farmers investigating the supply. Finding that a sufficient quantity of moss could be had, he arranged with Mr. A. Skjerdingstad, a local merchant, to procure and ship 250 tons, if it should be wanted. On the 16th he returned to Trondhjem, and on the 18th took the mail steamer *Vesteraalen* for Tromsoe, where he arrived on the 21st. Transferring to the connecting steamer, Hammerfest was reached on the 22d. At Hammerfest he received a cablegram of December 22, from the Secretary of War, asking if 600 reindeer could be purchased. Leaving Hammerfest on the morning of the 23d of December, that evening brought him to Bosekop, at the head of Alten Fiord, which was to be his headquarters.

Upon arriving at Bosekop he received the cablegram of December 23 from the Secretary of War, directing him to purchase 500 reindeer, etc. On the morning of December 25, before leaving New York, according to instructions from the Secretary of War, I cabled him to hire all the help he needed to expedite matters and to send out in different directions. Consequently, borrowing 1,000 kroners, on December 29 he hired Mr. Per Rist and sent him to Kautokeino, 112 miles over the mountains, and on the 31st Mr. Samuel Kemi (both Lapps, returned from Alaska), who was sent to Enare, Finland, 265 miles distant, and Mr. Carl Suhr to Sjus Javre, 101 miles, to bargain for trained reindeer, sleds, and harness. The same day he wrote Mr. A. Paulsen, a merchant at Karasjok, and arranged with Mr. O. Kjeldsberg, another merchant, to advance money for the purchase of moss. Having set matters in motion, he was compelled to wait at Bosekop for funds. While thus waiting he closed by telegraph a contract with Mr. A. Skjerdingstad to deliver 900 horse loads of reindeer moss at the Roros depot—500 loads at 7 kroner per load and 400 loads at 8 kroner per load—to be delivered to me or to my order.

Upon arriving at Trondhjem, January 8, I arranged that the moss should be shipped to Mr. E. A. Tönseth, commission merchant, at

Trondhjem. I have already referred to the unsuccessful efforts made in London to forward money to Mr. Kjellmann, and that it was not until I reached Trondhjem, January 8, that I succeeded. Receiving this money on the morning of January 9, Mr. Kjellmann left the same forenoon with reindeer team for Kautokeino to meet and receive the reports of the several men that had been sent in advance to make contracts. Reaching Kautokeino on the 11th, he found his lieutenants waiting for him with the welcome news that the whole number of reindeer, sleds, and harness were secured. On the 12th Mr. Kjellmann signed contracts with 23 Laplanders as drivers and on the 13th started on his return to Bosekop to report progress to me and secure additional funds for further payments. Encountering a blizzard in crossing the mountains and losing his way, he did not reach Bosekop until the 16th. Securing from me additional funds, on the 18th Mr. M. Kjeldsberg and Mr. Per Rist were sent to Maci and Kautokeino to complete payments and bring the reindeer, sleds, and harness, with the drivers and their families, to Bosekop for shipment. On the 19th Mr. Kjellmann left for Sjus Javre to do the same thing for that section. On the 21st Mr. Carl Suhr was dispatched from Sjus Javre to Bautajok, 162 miles, and Mr. Samuel Kemi to Enare, to assemble and move to Bosekop the reindeer, drivers, etc., procured at those places.

Having started his lieutenants, Mr. Kjellmann himself left Sjus Javre on the 21st for Karasjok, where, on the 24th, he contracted with the drivers and paid for the reindeer which had been secured by Mr. A. Paulsen.

Final settlements having been completed, Mr. Kjellmann started on the 25th to return to the coast, reaching Bosekop on the 28th, in the midst of a furious storm, the most severe of the winter. That storm, which had been raging almost without cessation for three weeks, piling the snow in great banks along the fences, filling lanes full above the fence tops, and obliterating all evidences of roads or tracks in the open country, had been gradually increasing in severity until on the 26th, 27th, and 28th of January it had turned into a blizzard, culminating on the 28th in the worst day of the season. The hotel at Bosekop, a strong log building with a substantial stone foundation, in a sheltered spot, trembled under the furious blasts of wind and snow. At midday houses a block away could not be seen through the driving snow. All traffic was suspended in the street; and yet on the mountains, where the cold was much greater and the wind swept with the force of a hurricane, were four herds of reindeer, and between one and two hundred men, women, and children in open sleds, facing the blizzard as, on different roads and widely separated sections, they were centering into Bosekop. While anxious lest they should be detained by the storm and perhaps some of the children perish, I received a call from the mayor (landsman) of the village. Inquiring what were the

prospects of the Lapps getting through, he shook his head, saying that nothing could face that storm for any length of time and live. And I doubt whether any other race than the Lapp, that was cradled in the snow and inured from childhood to hardship, could have done so, or any other animal than the reindeer have brought them safely over the storm-swept and trackless mountains.

About noon, going to a window and with a knife scraping off the frost in order to get sight of a thermometer hanging outside, I saw faintly through the whirling snow a solitary reindeer coming up the street, and soon after could make out a sled with a man incased in ice and snow. It was Mr. Kjellmann, his great fur coat covered with snow and his face and whiskers incased in a mask of ice.

Toward evening a Lapp arrived, announcing that Mr. Mathis Rira, with a band of 90 deer, had arrived from Maci, and gone into camp in the mountains back of the village. And on the afternoon of January 31 we were cheered by the safe arrival of the other three bands. Driving out with reindeer teams 7 miles to the crossing of Alten River, we met Mr. Carl Suhr and Mr. Samuel Kemi, with 4 men and 114 head of deer, from Bautajok, 165 miles distant. They were sent into camp on the east side of Alten River. Returning to Bosekop, we were met by a messenger announcing that Mr. M. Kjeldsberg and Mr. Per Rist, from Kautokeino, with 44 Lapps and 252 head of deer, had arrived and gone into camp.

While we were rejoicing in their safe arrival another messenger came with the news that Mr. A. Paulsen, with 29 Lapps and 90 deer, from Karasjok, had also arrived and gone into camp outside of the village. The three parties, starting from places a hundred miles apart and journeying by different routes, had reached the rendezvous within a few hours of one another.

On February 1 the little village of Bosekop awoke from its Arctic night to unusual stir and activity as the Lapps and deer came pouring in long lines over the hill into the village, filling up Market Square. The hundreds of Lapps, in their bright-colored, picturesque national dress, those that were going away and those that had come to see them off, greeting old friends and meeting new ones, the unpacking of sleds and preparations for embarkation, all made a picture never to be forgotten. All was bustle and excitement. By night everything was ready for the arrival of the steamship, and the first part of the expedition—the purchase of reindeer, sleds, and harness, together with the securing of competent drivers—was an accomplished success. The greatness and extent of this success is heightened by the environment.

First. If we had not needed deer trained to harness we could have bought a whole herd, and thus secured over 500 head in one transaction; but needing only trained ones, they had to be picked up in small lots of three and four out of a herd—perhaps four from the first

herd visited, then five or six out of the second herd, 15 or 20 miles away, and then two or three from a third herd located on an almost inaccessible mountain off the usual line of travel. The seven men that have been out buying have ranged from the ocean eastward across northern Norway to the edge of Russian Finland. This has aggregated 3,000 miles of reindeer travel.

Second. This 3,000 miles of reindeer sledding had been made in a region from 3 to 4 degrees of latitude north of the arctic circle and during the arctic night, when the sun does not appear above the horizon from November 18 to January 23; 3,000 miles of sledding through long reaches of unsettled forests, over storm-swept mountains, and along the edge of dizzy precipices in the darkness of night.

Third. This 3,000 miles of travel had been made in the middle of the arctic winter, when fearful storms are of frequent occurrence. The mountain passes crossed and recrossed during January are as difficult and dangerous as the Chilcat Pass of Alaska.

Fourth. The hindrance arising from heredity and the custom of centuries. If we had gone into wide-awake and intelligent New England and proposed to a laboring man to break up his home, settle his affairs, and start in two weeks with his family to travel in midwinter, in an open sled, from 100 to 200 miles to take a railroad to Alaska, he would have said to us "the time is too short." Much more, then, is the time considered too short when we come to the nonprogressive Lapps, whose ancestors have occupied the same country from the beginning of their history, whose young people have never been found among the emigrants flocking from all nations to America, who beyond all other nationalities have clung to their ancestral homes, and ask them to break up their homes, dispose of their property, settle their affairs, visit parents or other near relatives perhaps for the last time on earth, and be ready in two weeks to start for the end of the earth. And all this has been accomplished within a month from the time the appropriation was made by Congress.

In the meantime Lieut. D. B. Devore had chartered the transport steamer *Manitoban*, of the Allan Line, Glasgow. Sailing from Greenock, Scotland, January 16, she arrived at Trondhjem January 23 for the purpose of loading up the moss which had been gathered there for the use of the reindeer herd. A severe storm detained the vessel at Trondhjem until the 29th, when she sailed, reaching Bosekop on February 2. Learning that the steamship had arrived, I went on board and arrangements were quickly consummated for loading the Lapland reindeer. A large barge was taken over to the ship, upon which was built a platform, from which a gangway was erected to the ship. The reindeer were brought over from the shore to the barge in rowboats, and from the rowboats led up the gang plank directly into the ship. That the deer might be loaded more compactly and to prevent their being injured during the trip, their horns were sawed off

MILKING A REINDEER.

A Laplander Family living in a Dirt Hut.

within an inch of the flesh. During the first day 300 deer, 200 sleds, and considerable baled moss were loaded on the steamer. The work was pushed vigorously all day until 7 p. m., when the tired men refused to work longer, even for extra pay.

On the morning of February 3 work was resumed at 6.30 o'clock. The day was bitter cold, with a light wind blowing from the mountains. By 10 o'clock all the deer that were in the place had been sent off to the ship, but there was still a herd of 140 that had not come in from the mountains, where it was awaiting the arrival of the ship. Extra men were sent to assist in lassoing them, and as fast as they were brought to the barge their horns were sawed off and they were rushed aboard the ship. By 6 p. m. the deer were all on board, the balance of the sleds were sent aboard, and also the harness packed in large casks. The drivers and their families went on board during the evening. About midnight I removed from the hotel to the ship, and at 4 a. m. on Friday, February 4, the anchor was hoisted and we were off for New York.

The officers of the steamship *Manitoban* were Capt. Andrew E. Braes, Chief Officer James Buchanan, Second Officer Charles S. Cheeper, Third Officer Robert M. McMaster, Fourth Officer D. O. Hagan, Chief Engineer John Stett, Second Engineer Mr. Day, Surgeon Wolf. We had on board 539 reindeer that cost on an average $10 each, 418 sleds at $3.60 each, 511 sets of harness at $2.50 each. There were also on board 43 men, 16 women, and 19 children, Lapps; 15 men, 3 women, and 7 children, Norwegians; and 10 men, Fins; making 78 Lapps, 25 Norwegians, and 10 Finns, or 113 emigrants. Of the women, 16 were married, 6 of them recently. Among the Lapp men was a Mr. Samuel Johannesen Balto, who accompanied Nansen in his famous trip across Greenland, for which he received a silver medal from Oscar II, King of Sweden and Norway. There was also in the company Johan Petter Stalogargo, a Finn, who has the distinction of being the northernmost mail carrier in the world, having for eight years carried the mail on his back to North Cape, Norway, traveling on skees (Norwegian snowshoes). Among the 68 men were 13 who had had experience in carrying the mail with reindeer teams across the mountains and canyons and plains of arctic Lapland. (For a detailed list of colonists see Appendix, pp. 105, 106.)

Mr. Kjellmann and myself were the only cabin passengers. Lieutenant Devore returned to the United States by way of Trondhjem and London. The first two days out we had a fair wind and smooth sea, but on February 8, when off the coast of Ireland, we encountered a heavy head wind, which lasted for nine days, increasing in violence from day to day until on February 15 it had reached the proportions of a gale. On the 14th one of the lifeboats was wrenched from the davits and so badly stove in on deck that it had to be broken up. Some of the 2-inch plank bolted together around the cattle pens on

the hurricane deck were wrenched apart and broken in pieces, and the 130 reindeer in pens on that deck were drenched with the seas that broke over them, and for nine days and nights they were not dry once.

On the 15th the ship's figurehead was torn from the iron prow and swept out to sea, and heavy iron stanchions broken off, while sea after sea swept the deck. The danger of being washed overboard was so great that the men were not allowed on deck, and the reindeer were of necessity left without food. Toward evening, there being a lull in the storm, the deer were fed. Captain Braes, who has been at sea for forty-two years, and his first officer, twenty-four years, testify that in all their experience they never encountered anything worse. The deer proved to be good sea travelers, learning to balance themselves with the rolling of the ship, and to rest by lying down the same as if they had been on their native pasture. The loss of one deer by death out of 539 was a very small thing; that death, however, was not due to the sea voyage, but to injuries received in fighting. The same might have occurred if they had been running at large on land. Whenever during the journey we encountered a snowstorm, the snow was carefully gathered from the deck by the Lapps in pails and carried to the pens for the use of the reindeer, and they ate it with avidity. The men were organized into gangs, with overseers, for the feeding and care of the deer upon the trip.

On February 27 our eyes were gladdened with the welcome sight of land off New England, and that evening we dropped anchor inside of Sandy Hook.

February 28, after the visit of the quarantine officers, the ship slowly steamed up to the cattle yards of the Pennsylvania Railroad in Jersey City, where the deer were immediately unloaded from the ship, and the following day loaded into cars that were waiting for them, and on the afternoon of March 1, in two sections, were started across the continent by way of the Pennsylvania, Wisconsin Central, and Great Northern railways to Seattle. At New York they were placed in charge of Lieutenant Devore, U. S. A., who accompanied them to Seattle, while I returned to Washington, D. C.

On the 10th of March I was detailed by the Commissioner of Education, under instructions from the Secretary of the Interior, to proceed to the Pacific coast and resume charge of the Lapps and the reindeer, which would be turned over to me by the officers of the Army in charge.

Leaving Washington on March 11, I overtook the reindeer herd at Seattle, Wash., on the 16th of March, where they were being loaded under direction of Maj. W. R. Abercrombie, U. S. A., on the bark *Seminole*. They had been in Seattle nine days while awaiting transportation to Alaska. To save the moss brought over from Lapland for the sea voyage from Seattle to Alaska the deer were taken to one

of the city parks of Seattle and placed on grass. As the result of the change of diet four died while there and eight others after leaving Seattle.

In accordance with a telegram from the Secretary of War to Brigadier-General Merriam of March 16, 1898, 40 of the Lapps, mainly women and children, were left at the Fort Townsend Barracks, to be sent later by sea to Alaska via the Aleutian Islands and St. Michael. Mr. Regnor Dahl, a Norwegian, acquainted with the Lapp language, was placed in charge of this colony, subject to the authority of Capt. William W. Robinson, jr., U. S. A. Mrs. Dahl was made matron and Dr. F. H. Gambell physician. The remaining 57 men, in charge of Mr. William A. Kjellmann, superintendent of the Government reindeer stations in Alaska, were sent on the *Seminole* with the reindeer, to drive the portion of the herd turned over by the Secretary of War to the Secretary of the Interior overland from Haines Mission into the Yukon Valley. As sickness in his family would prevent Mr. Kjellmann from accompanying the party longer than to see them started from Haines Mission inland, Mr. Hedley E. Redmeyer was appointed superintendent of the overland party. As some of the Lapps were sick with measles, Dr. Hermon F. Titus, a physician of Seattle, was employed to accompany the party as far as Haines, Alaska, at an expense of $300.

The *Seminole* left Seattle at midnight, March 10, in tow of the steam tug *Sea Lion*, and reached Haines Mission on the afternoon of the 27th. There were no barges at that place, and Captain Brainard, U. S. A., went to Dyea and returned with a barge, upon which the reindeer, sleds, and moss were landed on the beach during the 28th. Brigadier-General Merriam, commanding the Department of the Columbia, had sent instructions to the commanding officer at Dyea for tents and camping outfit, to be in readiness for the Lapp drivers who were expected to proceed from Haines, on the coast, to Circle City, on the Yukon, a distance of over 1,000 miles, the longer portion of the way through an unknown region. Owing to the irregularity and unreliability of the mails in that section, the instructions, which were mailed at Skagway, did not reach the officer at Dyea, 6 miles distant, for nearly a week after they were due. This compelled the holding of the reindeer at Haines Mission for a week, and as there was no moss at that point they were fed on dried alfalfa (the only forage to be had), which weakened them.

On March 29, two days after the arrival of the herd at Haines, an unusually early thaw set in, taking the ice out of the Chilkat River, rendering the trail to the moss fields on the head waters of the Thleheena (a tributary of the Chilkat River), where it was proposed to pasture the reindeer preparatory to driving them across the country to the Yukon Valley, for the time being impracticable. If transportation had been ready at Seattle as expected, thus saving the nine days' time lost at that point, and the necessary provisions for the Lapp

drivers had been waiting their arrival at Haines, the reindeer herd could have been driven without any great loss either to Dawson or Circle City. But the above delays were disastrous. With unsuitable food, the deer grew weaker and weaker, until, on March 31, three days after the arrival, they commenced dying. On March 31, two died; April 1, four; April 2, three; and April 4, three.

On the 3d of April the Lapp attendants found some moss above timber line on a mountain on the peninsula 12 miles south of Haines, and on April 15 the whole herd was driven to pasturage, reaching it on the 6th, ten days after their arrival at Haines. Eight died on the road, being five on the 5th and three on the 6th.

On the 4th of April, in accordance with instructions from the Secretary of War to the commanding general of the Department of the Columbia, Capt. B. Eldridge, U. S. A., divided the herd, reserving 200 head for the War Department, and turning over 326 head to the Interior Department. The herd, however, was by this time in such a weakened condition that it was not separated, and later on so many died that the 140 head that survived were left in charge of the Interior Department.

After driving the herd to temporary pasturage on the mountain the Lapps returned to Haines and proceeded to make up their rations and supplies—which had at length been received—into bundles of the proper size for packing, it being the plan to remove the camp from the beach 50 miles inland to the commencement of the moss pastures of the interior.

On the 8th of April, with a portion of the supplies loaded into native canoes and the balance strapped to the backs of the Lapps, they started up the Chilkat River, reaching Klukwan village at 11 o'clock Saturday night, where they remained in camp over Easter Sunday. On Monday morning, the 11th, they took up their march for the mouth of the Thleheena River, where the supplies were left in a temporary camp.

As many of the reindeer had died and more were dying from the effects of the starvation at Haines, it was concluded to be unnecessary to send as many men as was originally intended to Circle City. Accordingly 15 were detailed for the overland trip and left with their supplies at the camp on the Thleheena. The remainder returned with Mr. Kjellmann down the Chilkat River to Haines, arriving at noon on the 12th. They were immediately sent to round-up the herd and start them for the Chilkat Valley to the moss pasturage at the head of Thleheena River.

While on pasture 1 deer died on the 7th of April, 6 each on the 8th and 9th, and 5 on the 10th. As the small pasture that had been found soon gave out, the death rate increased to 10 on the 11th.

On the 12th the herd was gathered together and an effort made to drive them slowly north up the Chilkat Valley toward the abundant and permanent moss fields at the head of the river. They were so

weak, however, that many lagged behind, and the herd became scattered along the 12 miles between the camp and Haines.

On the 13th the strongest deer reached camp opposite Haines, and Mr. Kjellmann received instructions from Captain Eldridge and Captain Abercrombie to keep the whole herd there until it should be determined whether any portion of the herd was in condition to accompany the military expeditions. Accordingly they were detained at that point until the 15th, during which days 14 died on the 12th, 22 on the 13th, 26 on the 14th, 28 on the 15th, and 34 on the 16th. On the night of the 15th the military expeditions sailed from Haines for Prince William Sound without waiting further on the reindeer.

Permission being granted, on the 16th of April the Lapps commenced collecting the herd and driving them northward. During the day a second band of deer overtook the first. Uniting the bands, the Lapps, with the second band, were returned to gather up more of the straggling deer.

On the morning of the 18th, while en route, a little moss was found on a steep mountain side. Camp was immediately made and all hands sent to pack the moss down in sacks to the deer.

On the 19th Mr. Kjellmann returned to the peninsula south of Haines, where the balance of the herd left on the 15th had remained. Finding that they were still too weak to be moved, he took a few of the stronger ones and on the 20th he overtook the first party on the Chilkat River. Joining the two parts of the herd into one, he sent back to the peninsula five men to care for the weak animals that had been left there and to try to move them slowly to the top of the mountain. The balance of the men were employed in cutting trees, gathering moss from the trees and rocks and carrying it to the main herd on the Chilkat River.

On the 24th, taking an Indian guide and 30 of the men, each pulling a sled loaded with rations, Mr. Kjellmann proceeded up the Thleheena Valley. He found the snow soft and deep and the weather rainy, so that very slow progress was made.

On the 27th he reached the moss fields on the north summit of the Chilkat or Thleheena Pass, about 50 miles from Haines. The moss was in great abundance and of the best quality. The rations were soon unloaded, the sleds reloaded with moss, and a start was made to return to the herd. When about 10 miles from the summit the moss was unloaded and a man sent down the valley to start the herd at once to the moss, the sleds returning to the summit for a second load. The men were now divided into two gangs, one drawing moss for the herd and the other pulling the sleds loaded with the rations for the men that were to make the overland journey.

On the 6th of May the 185 reindeer reached the north summit and were turned loose in the moss field to recover their strength. Forty-three deer were still left in the Chilkat Peninsula, making 228 alive at that date, out of 526 that were loaded at Haines.

The death roll from starvation was as follows:

Date.	Number.	Date.	Number.	Date.	Number.	Date.	Number.
Mar. 31	2	Apr. 10	5	Apr. 20	8	Apr. 30	2
Apr. 1	4	11	10	21	9	May 1	1
2	3	12	14	22	11	2	2
3	0	13	22	23	9	3	1
4	3	14	36	24	5	4	1
5	5	15	28	25	3	5	0
6	3	16	34	26	2	6	0
7	1	17	25	27	3		
8	6	18	28	28	1	Total	296
9	6	19	10	29	3		

As the herd would need to remain for some time at that point, and the care of the same was assumed by Mr. Redmeyer, Mr. Kjellmann, taking 43 of the men, returned to Haines, where he securely stored the sleds, and on the 15th of May embarked for Port Townsend, reaching that point on the evening of the 18th. Telegraphing to Vancouver Barracks for orders, he received instructions from Assistant Adjutant-General Davis to take his party to Fort Townsend, which he did, and left them in charge of Mr. Regnor Dahl.

After the departure of the men on the 8th of April for the Chilkat Pass, there being nothing further that I could do at that end of the line, I took boat on April 10 at Skagway, Alaska, reaching Seattle on the 15th, and Washington, D. C., on the 23d of April.

After the departure of Mr. Kjellmann from Mountain Camp, May 6, Mr. Redmeyer attempted to move the herd, but upon going 3 miles found they were too weak to travel any farther, when he again went into camp, which he named "Camp Pleasant," and where he remained until May 22. He then had 164 reindeer, which were all that had survived of the 185 that had reached Mountain Camp May 6; and of these a number were so weak that they could not digest the food, which was abundant around them. This still further reduced the number, until on September 1 there were 144 left, all of which, except three, had recovered their strength and health and were in good condition.

On May 22, Camp Pleasant, 53 miles from Haines, was left for the north. The snow was melting and was very soft, so that they could only travel at night when there was a crust. This necessitated so many delays that Mr. Redmeyer was forced to the conclusion that he would be unable to reach Circle City until late in the fall, and that the rations which he had with him would not suffice for the whole party for so long a time. He therefore again divided his men, sending 8 of them in charge of Mr. O. Paulsen south to Seattle to join the others at Fort. Townsend and be sent by steamer around by sea to St. Michael. He retained 6 with himself. The overland party then consisted of Hedley E. Redmeyer, Per Johannessen Hatta, Per Nilsen Siri, Klemet Persen Boini, Anders Aslaksen Bahr, Hans Andersen Siri, Emil Kjeldberg.

On September 27 the herd had reached the neighborhood of Hutchie Valley, at which time there was probably sufficient snow to enable them to again use sleds, after which Mr. Redmeyer expected to make more rapid progress on their way to Circle City. At Circle City Mr. P. C. Richardson, the contractor for carrying the United States mails up and down the Yukon Valley, expected to purchase the deer and employ them for carrying the mail.

On May 17 I left Washington on my return to the Pacific coast to look after the transportation of the Lapps from Fort Townsend to the reindeer headquarters near Unalaklik, Alaska, reaching Seattle, Wash., June 3.

On the 26th of May, 1898, the Secretary of War advised the commanding general of subsistence, at Vancouver Barracks, Wash., that, under instructions from the Secretary of the Interior, I would take charge of the reindeer recently bought in Lapland and turned over to the Department of the Interior by the War Department, conduct them to Alaska, and receipt for transportation and supplies for the herders, and supervise the payment of the salaries of the latter from the relief fund through the War Department. Accordingly, upon my arrival in Seattle, my first attention was given to securing transportation for the Lapps and their supplies. There was so great a demand for vessels to carry the large number of miners wishing to go to Alaska, together with the unusual quantities of freight, necessitated by the large emigration, that much difficulty was encountered in securing transportation.

However, on the 7th of June, after receiving bids as low as $9.75 per ton for freight on sailing vessels, an agreement was made with Mr. T. F. Townsley by which the rations for the Lapps were to be taken from Seattle to Unalaklik, Alaska, on the steamship *Del Norte*, at the rate of $16 per ton, ship measurement, the usual rate for the same on well-established lines being from $50 to $60 per ton. Previous to signing the agreement I ascertained from the marine insurance agencies that the steamer was seaworthy. The steamer was to have sailed June 17, but, owing to various complications in which the Government was not interested, did not finally get away until June 28. It being necessary to take a few of the Lapps to a part of the coast of Alaska only reached by the *Del Norte*, 12 of them, including the 8 which had arrived from Haines Mission, were taken on board the steamer with a passage rate to Alaska of $40 each.

On June 8 I received word from Mr. Dahl, in charge of the Lapps at Fort Townsend, accompanied by the certificate of the visiting physician, that the two children of Johan Olesen Pulk, who were among those who had been sick with the measles while crossing the Atlantic, had developed a scrofulous affection that would very soon necessitate their being kept separate from the rest of the party, thereby destroying the service that their parents might otherwise render the Government. Under the circumstances it seemed

best to return them to Lapland, and arrangements were made by which they started on the 10th of June on their return trip.

On the 12th of June, in compliance with telegraphic instructions from Major-General Merriam, dated June 5, 1898, Lieut. Henry C. Cabell, First Lieutenant, Fourteenth United States Infantry, shipped to me from Dyea, Alaska, per steamship *Utopia*, all the relief supplies remaining unsold. The larger portion of these supplies was used by Major-General Merriam in rationing the Lapps to the 31st of January, 1899, and the excess of butter and bacon from the relief supplies over and above the amount required for the rations was subsequently (July 8) by direction of the War Department turned over to the Interior Department for the use of the Lapps. The Dalton sleds belonging to the relief expedition not being needed were not received by me, but were retained by General Merriam.

Arrangements were made with the Seattle Hardware Company for shipping the remainder of the Lapps on the schooner *Louise J. Kenney*, at the rate of $30 each for second-cabin passage, the Lapps furnishing their own provisions.

On the 21st of June the Laplanders were loaded on the schooner, when it was found that, unknown to myself, the purser had taken on board 35 miners, which overcrowded the vessel and rendered it liable to seizure by the United States authorities for disregard of the emigration laws.

Going over to Port Townsend from Seattle, I removed from the vessel 30 Lapps with 6 children, and brought them to Seattle, where I secured a $30 rate (the same as paid on the *Kenney*) for them on the steamship *Navarro*, leaving 27 Lapps and 8 children on board of the schooner *Kenney*, which sailed on the evening of June 22 for Alaska.

On the *Navarro* Dr. C. P. Dolan was engaged as physician for the Lapps for the trip at a cost of $43, and on the steamer *Del Norte* Dr. William J. Toussant was employed as physician for the Lapps during the trip at an expense of $5. On the schooner *Louise J. Kenney* medical attention was given the Lapps by Dr. F. H. Gambell, their regular physician.

The steamship *Navarro* reached St. Michael on July 27. A day or two afterwards the same place was reached by the steamer *Del Norte*. The Lapps on the *Navarro* were transferred to the *Del Norte*, and on July 30 were landed at Unalaklik in the immediate vicinity of the reindeer station, the schooner *Louise J. Kenney*, with the first party of Lapps, having arrived on the 29th. Arrangements are in progress with the United States mail contractor for the Yukon Valley by which it is hoped the larger number of the Lapps will be distributed along the Yukon Valley as they shall be needed, for the purpose of carrying the United States mail.

NATURALIZATION OF THE LAPPS.

As an evidence of the purpose of the Norwegians and Lapps recently brought over from Lapland to become permanent citizens, the follow-

ing persons have taken out their first naturalization papers: Magnusi Kjeldsberg, Johan Eira, Wilhelm Basi, Lauritz Stephansen, Johan Hilmar Hansen, Karl Johan Sacariasen, Ole M. Rapp, Alfred Hermansen, Ole Olsen Bar, Jeremias Abrahamsen, Isak Johannesen Hatta, Isak Salamonsen Nakkila, Per Andersen, Samuel Johannesen Balto, Nils Persen Sara, Nils Klemetsen, Lauritz Larsen, Otto M. Leinan, Hans Samuelsen, Ole G. Berg, Thoralf Kjeldberg, Peder Berg, Ole Johansen Stenfjeld, Karl Ove Suhr, Japeth Lindeberg, Ole Krogh, and Johan Petter Stalogargo.

The Lapps are well satisfied with their new home, and promise to make a very valuable and important addition to the population of Alaska and the development of its resources.

In my estimation, next to the discovery of gold, the most important event, commercially, in the history of Alaska during this year is the importation of this colony of Lapps. Experience is rapidly demonstrating that the only possible efficient transportation service in Alaska must be through the use of reindeer, and this necessitates the trained and expert drivers of reindeer found among the civilized Lapps and Finns. The 68 men that were brought over by this expedition are all picked men and expect to be permanent settlers of Alaska. They hope ultimately to have herds of their own and raise and train reindeer to sell to the transportation companies. Their success will naturally attract others of their people and render permanent the establishment of the reindeer industry in Alaska.

In this connection I make acknowledgments of the assistance rendered in the movement of the Lapps and reindeer by Brig. Gen. Henry C. Merriam, U. S. A., commanding the Department of the Columbia; also to Capt. W. W. Robinson, jr., U. S. A., at Seattle; Capt. B. Eldridge, U. S. A.; Capt. D. L. Brainard, U. S. A.; Capt. William R. Abercrombie, U. S. A.; Lieut. W. S. Graves, U. S. A., and especially to my associate, Capt. D. B. Devore, U. S. A., who shared with me in the perplexities, difficulties, and hardships encountered in Lapland.

TRIP TO SIBERIA.

Having landed the Laplanders with their rations on the beach a mile and a half below the village of Unalaklik, the steamer *Del Norte* raised anchor and sailed for Golovin Bay on the evening of August 1. Entering the bay on the morning of the 2d about 8 o'clock, the steamer went aground. Here we remained for twenty-four hours. Taking a small boat, a visit was made to the village and Swede Mission Station, and arrangements were made for landing the supplies for the mission and reindeer stations, which was successfully accomplished that afternoon.

Getting afloat about midday on the 3d, a start was made for the Teller Reindeer Station, which was reached on the morning of the 4th. The station was visited and inspected and we pushed on to St. Lawrence Bay, Siberia, which was reached on the morning of the 6th.

Going ashore, I found that the station had been abandoned by the party in charge on the 3d of July. A conference was had with the natives and notice was sent to the owners of reindeer herds to drive their animals to the coast convenient for the ship. Then taking up anchor, we sailed out of St. Lawrence Bay around to the south side of South Cape. On Sunday, the floating ice coming in so thickly as to endanger the safety of the vessel, the captain shifted his anchorage inside of the bay. The following days were consumed in securing 100 reindeer which had been previously purchased by the party in charge, and 61 which were purchased on the spot.

Having secured all the deer that was possible at the time, and taken on board the furniture from the station, and placed the houses in charge of one of the natives, the ship sailed for Cape Prince of Wales, reaching there on the night of the 10th of August. The surf being too rough for landing the deer, the vessel continued on her course into Port Clarence, where they were landed on the 11th at Teller Reindeer Station and placed in charge of Frederik Larsen, a Lapp herder, who was directed to drive them across the country and turn them over to Mr. W. T. Lopp, in charge of the American Missionary Association Station at Cape Prince of Wales. These deer were for the purpose of returning, in part, those which had been previously borrowed from that station by the Government and sent overland to Point Barrow to be slaughtered for food for the whalers that were imprisoned in the ice and out of provisions. The Rev. T. L. Brevig, who was in charge of the buildings, being desirous of spending the winter in the States, the custody of the buildings was given to Dr. Brandon, a physician and miner who intended wintering at that place. Mr. Brevig and family coming on board of the steamer, we sailed on the night of the 12th for St. Lawrence Island, reaching there on the night of the 13th. The fog was so dense, however, that we were unable to find the village until the following morning.

On the 14th Mr. W. F. Doty, who had agreed to take for one year the school previously taught by Mr. V. C. Gambell (who was lost at sea while returning to his station in May), together with his annual supplies, was landed on the beach, and in the evening the steamer sailed for Unalaklik, which was reached on the 16th. Two days were spent in unloading supplies and arranging the affairs of the Eaton Reindeer Station. On the night of the 18th the *Del Norte* sailed for St. Michael, reaching there early in the morning of the 19th. On the 21st I was able to go on board the steamer *Roanoke* and start for Seattle, reaching there August 30. Leaving next day on the railway, Washington was reached on the 6th of September, 1898, thus closing a trip of 31,801 miles since the 23d of December, 1897.

Very respectfully, yours,

SHELDON JACKSON,

United States General Agent of Education in Alaska.

The COMMISSIONER OF EDUCATION.

WILLIAM A. KJELLMANN AND REINDEER. (DEHORNED.)
Photograph by La Roche. (See page 11.)

JOHN W. KELLY.
Photograph by C. Siem. (See page 14.)

PURCHASING STATION, SAINT LAWRENCE BAY, SIBERIA.
Photograph by John W. Kelly. (See page 14.)

APPENDIX.

ANNUAL REPORT OF THE EATON REINDEER STATION FOR 1898.

By A. N. KITTILSEN, M. D.

UNALAKLIK, ALASKA, *June 30, 1898.*

SIR: I have the honor to submit for your consideration the annual report of the United States reindeer stations in Alaska.

As usual, there was a large number of whaling and trading vessels at Port Clarence during the month of July.

Captain Tuttle, of the United States revenue cutter *Bear*, brought the first news of the great gold finds in the Klondike district. Had the Klondike been nearer, I am afraid the excitement would have carried me to the diggings. Two ignorant sailors on being informed by a companion that it was only 35 miles to the gold fields deserted their vessel and started on foot to the new Eldorado. They were two sorry looking specimens of humanity when they returned about ten days later.

The schooner *Volant*, our provision vessel, arrived at Port Clarence August 5. Such provisions as were needed at the Teller Station were discharged, while such goods on land as were not needed here were sent aboard to be taken to Unalaklik.

Having decided to go with the vessel to Unalaklik, I was taken on board August 8. The *Volant* anchored outside of Golovin Bay August 12, and Rev. P. H. Anderson, a teacher for the Swedish Mission School, was taken ashore. August 13 the anchor was dropped about 5 miles southwest of Unalaklik. A storm was raging, which made it impossible for me to land. On August 16, although the storm was still quite severe, we sighted a boat coming toward us from the village. Rev. A. E. Karlson and some natives were in the boat. I went on shore with them and made preparation for the landing of our goods. The next day we had fine weather and the work of discharging began. I employed all the natives in the village; still it took three days to get the goods on shore. It is a very bad harbor. A vessel can not come nearer the shore than 3 miles on account of shallow water. The same number of hands that were employed here would have discharged the same amount of goods at Teller Station in half a day. If the reindeer station is to be permanently located here, it

will be absolutely necessary to purchase a steam launch and two barges.

After housing the goods, I went with the *Volant* to St. Michael, where I awaited your arrival from the Klondike.

September 15 I went aboard the revenue cutter *Bear* and was taken back to Port Clarence.

During the summer of 1897 the deer herd was kept on the south side of Port Clarence, in the vicinity of Point Riley. The herd was moved quite frequently, as that is the only preventive we know of for that dread disease "hoof rot," as some call it. For my part, I believe it to be anthrax. I know of no medicament that is of any benefit. Prophylaxis in the shape of frequent moves during the summer months helps materially. The number that have succumbed to the disease this last year is small compared to previous years.

In my opinion, the very best place to keep the deer during the summer months is a region where they could roam about over a large area. There is such a point about 35 miles north of Unalaklik, and we intend, if possible, to keep the deer there during the coming summer.

Frederick Larsen was kept at the herd as overseer and John Tornensis and Mikkel Nakkila were kept at the station repairing and making sleds and harness. We were severely handicapped on account of lack of suitable sled material.

October 4 I started for Cape Prince of Wales in a whaleboat, and arrived there the next day. Mr. Lopp and the herders were not willing to sell their surplus male deer at $15 per head, and as that was the highest price you authorized me to pay, I could not get them.

October 25 two Lapps, an Eskimo, and myself started for the Cape Nome herd for the purpose of bringing back with me the deer in that herd belonging to the Government. We arrived at Charley's place October 27, and after a good deal of work succeeded in getting the deer we wanted. We picked out 52 males, 65 females, and 3 fawns for the Government, and 4 females and 3 fawns for Tatpan, of Golovin Bay. Returned to Port Clarence November 1.

One Lapp and myself went out to the herd November 8 and drove it across Grantly Harbor and placed it about 4 miles southeast of Teller Station, where the herders were ordered to build a pen.

November 17 two Lapps, an Eskimo, and myself started for Cape Prince of Wales for the purpose of bringing back with me 3 deer belonging to the Government, and also some of their surplus sled deer that I was to dispose of when a market was found. We returned to Port Clarence November 28, bringing with us the 3 deer belonging to the Government and 49 deer belonging to the Cape Prince of Wales herd.

November 23 some dogs, presumably from Nook, attacked the herd and killed one deer. This happened at night when no one was with

the herd. When the ground is covered with snow no night watchers are kept, as the deer do not roam about much then, and if any have strayed they are easily tracked. By making a circuit in the morning around the place where the deer have been during the night it is easily ascertained whether any have strayed or not.

December 3rd; deer were marked and given to Tautook, Sekeoglook, and Wocksock. Tautook received 20 females, 3 bulls, and 2 sled deer, besides the 12 females, 10 fawns, and 4 sled deer previously belonging to him. Sekeoglook received 20 females, 3 bulls, and 2 sled deer, besides the 6 females, 4 fawns, 1 sled deer, and 1 bull previously belonging to him. Wocksock received 20 females, 2 bulls, and 3 sled deer, besides the 3 females, 2 fawns, and 1 sled deer previously belonging to him. Nine lame females belonging to the Government herd were also left.

Packing up was now the order of the day. Mr. W. T. Lopp asked permission to send one of his herders with me, which was granted, and as a consequence Keok arrived a few days before we started. Rev. T. L. Brevig will turn over to you the accounts of Teller Station.

December 16 we bade good-bye to the good people of Port Clarence and turned our faces toward Unalaklik. We went to the deer camp, which was then situated about 6 miles southeast of Teller Station. The following day the herders lassoed the sled deer we were to use. Mr. Brevig came out to the camp during the day. Ojello was quite sick; consequently we decided that it was better to leave him at Port Clarence.

December 19 we broke camp. There were 17 of us, counting women and children. We had 40 sleds. The party was divided into two sections. One part had the herd to look after and the other part had the caravan to take care of. We went along very nicely where traveling was easy, but had more or less trouble when deep snow or woods were encountered. The herd was always kept ahead of the caravan. At night we simply tied an extra piece of rope to the halter of the sled deer and let them run loose in the herd. They were very easily caught in the morning. We had fair traveling as far as Golovin Bay, where we arrived December 29. I had a pleasant visit at Golovin Bay. I then first heard of the detachment of soldiers at St. Michael, and that the surrounding country had been declared a military reservation.

Tatpan wanted to go with us to Unalaklik, but I could not take him, as Mr. Hultberg and Ohitlson were away at the time. We then transferred the 7 deer taken from Charley for Tatpan to the Golovin herd. The deer belonging to Martin Jacobson were lassoed and taken into the Government herd.

January 3, 1898, we left Golovin Bay, and on January 5 encountered snow so deep and soft that we were unable to get any farther. The moss was so thickly covered with snow that the deer could not get at it. We talked the situation over and decided to send the deer back

toward Golovin Bay, where grazing ground could be found. Three herders, with one tent, were sent back with the deer, while the rest of the party pitched tents and remained where the deep snow was encountered. Two herders were sent forward on skees to ascertain the condition of the snow and the prospects for deer food. They returned two days later, reporting deep and soft snow as far as they had been, and also that deer food was not to be found north of Norton Bay. I did not like the delay, but it could not be helped. We thought that a storm, accompanied with cold weather, would improve the traveling so that we would be able to proceed.

January 10 Lieutenant Jarvis and Dr. Call, of the United States Revenue-Cutter Service, arrived at our camp and told us about the distress at Point Barrow. We had suspected something of the kind, as very few vessels had been seen going down through the Straits in the fall. Lieutenant Jarvis made me acquainted with his mission and handed me an order from the commanding officer at Fort St. Michael requesting me to give them (Jarvis and Call) such deer as they might need on their trip to Point Barrow.

I asked if he had any instructions for me from Washington. He thought so, but was unable to find any. After considering the matter I told them that it was useless to give them deer, because they would be unable to do anything with them, but that we would take them to Port Clarence. As our provisions were getting low, I decided to send Ahlook, Nuclak, Sandlock, and Kakiernak to Unalaklik with the dog sleds that had brought the Point Barrow party. I then made arrangements with the Swedish Mission to furnish me such goods as we might need, and I promised to replace the same in the spring.

December 12 Mikkil, Lieutenant Jarvis, Dr. Call, Keok, and myself started for Port Clarence, where we arrived a week later. After another week's rest we started back toward Golovin Bay, where we arrived February 9. There I was told that Lieutenant Bertholf, of the Point Barrow relief expedition, had come a few days before my return and induced Fredrik Larsen to take five deer and sleds to help him across to Kotzebue Sound with some provisions. The route was such, he had claimed, that it was impossible to get the goods across with dog teams.

The road was now easy, but two of the herders were quite sick, consequently we had to wait for them to get well. A few days later soft weather set in again and traveling was as bad as before I went to Port Clarence.

February 16 a copy of a telegram from Hon. W. T. Harris to W. A. Kjellmann was brought to me by a native coming from St. Michael. This telegram asked Kjellmann to get together all the sled deer in Alaska, together with sled harness and drivers, and report to the commanding officer at Fort St. Michael. Besides this, there was an

order from Colonel Randall requesting me to report with sleds and deer, also drivers, at Fort St. Michael with the least possible delay. I then made an attempt to go ahead, but turned back, as it was plain that a large number if not all of the deer would perish before food could be reached.

March 6 Lieut. E. S. Walker arrived from Fort St. Michael with orders to proceed without delay. I informed him how matters were, and advised him to wait for cold weather to go on, but that all risks would have to be taken by him. He decided to wait for a change of weather.

March 13 cold weather at last set in, and we started for Unalaklik, where we arrived March 21.

Fredrik Larsen returned from Kotzebue Sound a few days before we left Golovin Bay. The Point Barrow party took his deer, consequently he was compelled to walk back.

Lieutenant Walker had orders to go up the Yukon River. I turned over to him deer, sleds, and two drivers. They soon encountered deep and soft snow, consequently were compelled to return. A good place for the herd was found about 4 miles up the Unalaklik River, and the hauling of lumber, etc., up to the building place was commenced. March 28 Lieutenant Walker, one Lapp, and myself started for St. Michael, where we arrived in due time. We were given a kind reception and thoroughly enjoyed being in the civilized world again. Colonel Randall had asked for 25 deer and 25 sleds, with drivers, to come and stay at St. Michael, in case there should be any use for them. When I returned to Unalaklik I started the deer, sleds, and drivers asked for toward St. Michael, but received a message in the evening of the day the deer were sent stating that the deer were not wanted; so I sent the messenger after them.

When all the building material had been hauled up the river the herd was moved to the foot of the mountains southeast of Unalaklik, where a good fawning place was found.

On account of the lateness of the season and the amount of extra labor we had been called upon to perform I made arrangements with Stephen Ivanhoff to bring 300 logs to the building place.

April 12 we went back to Golovin Bay with provisions to replace those we had received during the winter, and returned to Unalaklik May 5.

Three prairie fires raged in this vicinity last summer. These fires completely destroy the moss. It is a punishable offense in Lapland to set fire to moss, whether on purpose or through negligence. I thought something could also be done here, consequently I started for St. Michael to consult Colonel Randall. He immediately saw the need of action in the matter, and sent Lieutenant Walker back with me to inform the natives that setting fire to moss is a crime. Lieu-

tenant Walker having orders to go through to Golovin Bay, I sent Johan Tornensis with him as driver.

About the middle of May the deer were moved down to the Unalaklik River just opposite the proposed building site, where they stayed about one month. The mosquitoes drove the deer and people toward the seashore, about 2 miles south of Unalaklik, where they are at present located.

We have this spring ear-marked all the deer and fawns. A record of number is on file at the station.

The fawning season passed off successfully. Out of 213 fawns born 18 were lost. Stillborn fawns have been included in the 18 lost. Nine deer have been butchered during the year, 6 have come to their death through accidental injuries, 1 was killed by dogs, and 17 succumbed to the hoof disease. Taking it all in all, I think that is comparatively a favorable showing. Nine lame females belonging to the Government were left at Port Clarence and 9 sled deer were left at Golovin Bay. Five sled deer were taken by Lieutenant Jarvis of the Point Barrow relief expedition.

The apprentices have all been obedient and contented during the whole year. The Lapps have also acquitted themselves favorably.

I was very glad to hear that the deer taken to Point Barrow were not needed for food. Being composed mostly of females, that whole coast will soon be supplied with deer.

There are some recommendations I would have offered, but as I am not to be connected with the Government any longer, I will not introduce them.

I wish to thank Rev. T. L. Brevig and Rev. A. C. Karlsen for assistance given me during the year.

Hoping that the reindeer enterprise will continue to prosper, which I am positive it will, if properly handled, I am,

Your obedient servant,

A. N. KITTILSEN, M. D.,
Acting Superintendent.

Dr. SHELDON JACKSON,
General Agent of Education for Alaska.

Table showing ownership of deer in herd to-day.

	Grown deer.		Fawns.		Total.
	Male.	Female.	Male.	Female.	
Eaton Station	211	235	94	83	623
Elektoona	2	5	.....	4	11
Martin Jacobson	3	13	4	6	26
Ahlook	3	4	3	1	11
Total	.....	.....	.....	.....	671

Account of deer lost during the year 1897–98.

Date.	Males.	Females.	How lost.	Date.	Males.	Females.	How lost.
1897.				1897.			
July 14	1	.....	Internal disease.	Dec. 8	.....	1	Internal disease.
15	1	.....	Accidental injury.	9	1	.....	Butchered.
22	.....	1	Foot disease.	10	.....	1	Killed fighting.
23	.....	1	Internal disease.	13	.....	1	Butchered.
24	1	.....	Accidental injury.	14	1	.....	Internal disease.
Aug. 17	.....	1	Internal disease.				
26	1	.....	Do.	1898.			
Sept. 13	1	.....	Foot disease.	Jan. 1	1	.....	Butchered.
19	1	.....	Butchered.	11	1	.....	Do.
25	2	.....	Internal disease.	Feb. 26	.....	1	Accidental injury.
Oct. 1	.....	1	Foot disease.	Mar. 10	.....	1	Internal disease.
12	.....	1	Accidental injury.	18	.....	1	Butchered.
18	.....	1	Internal disease.	Apr. 6	2	.....	Do.
20	1	.....	Do.	June 25	1	.....	Internal disease.
27	1	.....	Do.	27	1	.....	Accidental injury.
Nov. 2	2	.....	Butchered.				
23	1	.....	Killed by dogs.	Total.	21	12	

List of Eskimos at station.

Wocksock, wife, and three children.
Sekeoglook and wife.
Tautook, wife, and one child.
Ojello, wife, and two children.
Ahlook, wife, and child.
Dunnak, wife, and one child.
Elektoona.
Martin Jacobson.

List of Laplanders at the station.

Mikkel J. Nakkila.
Beret Anne Nakkila.
Johan S. Tornensis.
Margrette Tornensis.
Beret Tornensis.
Inger Anne Tornensis.
Fredrik Larsen and wife.

ANNUAL REPORT OF TELLER REINDEER STATION FOR 1898.

By Rev. T. L. Brevig.

Teller Reindeer Station,
Port Clarence, June 30, 1898.

Honored Sir: In accordance with your instructions, I acted as Dr. Kittilsen's assistant until December 16, 1897, when he left for Eaton Station with the herd and employees of the station, and I assumed control of Teller Reindeer Station. The school was kept open as much as possible, but at times other duties made it necessary to close for a whole day or part of a day; however, at least two hours were generally spent in the schoolhouse. As fuel was scarce and the schoolhouse cold, after Christmas school was kept in the room formerly used by the Kjellmanns as a kitchen. The three Eskimo families left here have been with the herd all winter, during the coldest months at winter quarters on the Ahgeeopuk, and during fawning season, on the north side of the big lake, as the deep snow on the south side made it difficult to get at the moss. At present they are encamped near Nook.

Wocksock's oldest boy attended school during the winter. Tautook left here January to go with the United States relief expedition to Point Barrow. He took two of his own sled deer along, which he disposed of to the expedition. He returned to the station May 7, having, with Mr. W. T. Lopp, made the return trip in thirty days, of which twenty were actual traveling days with a dog team.

When the herd left here, eight sick females were left, and about January 10 a female deer strayed into the herd and was, by Wocksock and Sekeoglook, recognized as belonging to the Government. Four have had fawns that are living, making the total number belonging to the Government in this herd 11.

The apprentices have lost the following deer:

Tautook: One female, internal disease; 2 males, 1 disabled by being bitten by natives' dogs in January and killed in May because wounds would not heal; 1 deer in May from internal disease. Total, 3 grown deer; also 3 fawns died.

Sekeoglook: One male deer; 2 fawns.

Coogidloré. Tumasock Lablok. Esanetuck. Anneebuck. Kokleluk.

ESKIMO CHILDREN FROM BERING STRAITS. BROUGHT TO CARLISLE INDIAN SCHOOL BY DR. SHELDON JACKSON, OCTOBER, 1897.

Photograph by Choate.

Tumasock. Coogallore. Esanetuck. Kokleluk. Anneebuck. Lablok.

Wocksock: One male, scared by dogs and broke away from the driver, got entangled in some brush and strangled; 1 fawn.

Total belonging to apprentices: Males, 4; females, 1; fawns, 6. Belonging to the Government, males, 2; females, 2; total in herd, 15.

From the reports brought in, 80 fawns have been born. I have not been able to ascertain how many belong to each apprentice, but, as each knows his own deer, they have an understanding among themselves.

On January 21, 1898 (the coldest day we had, —38°), Lieut. D. Jarvis arrived on his trip to Point Barrow, in company with Dr. A. N. Kittilsen and Mikkel Nakkila, with deer from Golovin Bay, and left for Cape Prince of Wales with a dog team on the 23d of January. Dr. Call arrived with Charley's herd on the 27th of January and left at noon the 29th of January. Dr. Kittilsen and Mikkel Nakkila visited us from January 21 to January 29, 1898. Mr. John Dexter made a trading visit from March 22 to March 25, 1898. Mr. D. Libby visited his old friends from May 5 to 7, 1898, and renewed acquaintances made in the years 1866 and 1867, when he was here in the service of the American-Russian Telegraph Company (Western Union). Mr. N. O. Hultberg, from Golovin Bay, accompanied him.

Mr. T. Kjellmann, W. A. Kjellmann's father, who has been confined to his bed for a year by rheumatism, died May 27, 1898, and was buried May 29.

Ojello complained of not being well when the herd was removed, and, as he was just recovering from an attack of pneumonia, it was on consultation deemed best to let him remain at this station, as if he should have a relapse on the trip he would retard the movements of the whole party and have small chance of recovery. With his wife and daughter he has occupied the rooms vacated by Johan Tornensis.

The summer catch of salmon was small, owing to the attraction of the ships during the best fishing season; contrary weather also interfered to a small degree. As the tomcod, an important source of winter food for the natives, failed entirely to appear here after cold weather set in and has not come yet, scarcity of food has been prevailing. Seal have been caught by those that took the trouble to go far enough out to get them, and two families that diligently fished during the summer have had fish all winter. About January 1 the staple food fish was consumed, and if this station had not been here many would have suffered and probably starved. Work was given to those needing assistance and willing to work; those able to work but not willing to do so received no help. Only in two instances did I find it necessary to render considerable assistance without any return in work. Occasional help was given to many. All assistance was rendered from my private supplies. The demands of the United States Relief Expedition and the need of the natives exhausted the supplies of wheat flour, rye flour, corn meal, and shorts early in April, leaving only beans and

navy bread. When the supply of navy bread was very small only beans were traded. To my knowledge no actual suffering existed in this country, but many were hard pinched. One family complained of having eaten only seal thong for two days, although I had in that time given them over 100 biscuits in pay for work. Where there was no station where white man's food could be procured the natives suffered. Grouse were abundant in the Eaton River region during the winter and to some extent relieved the want.

The health of the employees has been good, and the number has been increased in Sekeoglook's family by a little girl.

Respectfully,

T. L. BREVIG.

Dr. SHELDON JACKSON,
General Agent of Education for Alaska.

Reindeer report from December 6, 1897, to July 1, 1898.

Date.	Reindeer.	Dr.				Cr.			
		Females.	Males.	Fawns.	Total.	Females.	Males.	Fawns.	Total.
1897.									
Dec. 6	Government	.....	.....	.....	.....	8	.....	.....	8
	Tautook	.....	.....	.....	.....	34	9	10	53
	Sekeoglook	.....	.....	.....	.....	26	7	4	37
	Wocksock	.....	.....	.....	.....	23	6	2	31
	Total	.....	.....	.....	.....	91	22	16	129
1898.									
Jan. 1	Deer	.....	.....	.....	.....	a 1	.....	.....	.....
Mar. 31	Government	2	.....	.....	2	.....	.....	.....	.....
	Tautook, sold to relief expedition	1	3	.....	4	.....	.....	.....	.....
	Sekeoglook	.....	1	.....	1	.....	.....	.....	.....
	Total	3	4	.....	7	89	18	16	123
Apr. 1	Balance	.....	.....	.....	.....	89	18	16	.....
June 30	Tautook	.....	1	3	4	.....	.....	29	.....
	Wocksock	.....	1	1	2	.....	.....	20	.....
	Sekeoglook	.....	.....	2	2	.....	.....	23	.....
	Government	.....	.....	.....	.....	.....	.....	4	.....
	Total	.....	2	6	8	89	16	92	197
July 1	Government	.....	.....	.....	.....	7	.....	4	11
	Tautook	.....	.....	.....	.....	33	5	39	77
	Sekeoglook	.....	.....	.....	.....	26	6	27	59
	Wocksock	.....	.....	.....	.....	23	5	22	50
	Total	.....	.....	.....	.....	89	16	92	197

a Strayed into herd.

ANNUAL REPORT OF THE GOLOVIN BAY REINDEER STATION FOR 1898.

By N. O. HULTBERG.

GOLOVIN BAY, *July 1, 1898.*

SIR: I have the honor to report our herd to be in the very best condition. It has yielded an increase of 132 fawns, of which 1 was stillborn and 3 died after being born, leaving at present date 128 alive. We have been practicing every branch belonging to reindeer industry, such as driving, breaking, milking, moving the herd, making harness, sleds, and pulks; all with the best success. Our herders are the same as were here last year, and are all worthy of the best commendation in every respect. We have experienced no difficulty or trouble whatever with the herd this year.

We have done as much traveling as circumstances permitted. Two sled deer were used in the relief expedition, which deer were not returned. The present number of deer in the herd is seen by the following table.

Respectfully,

N. O. HULTBERG.

Dr. SHELDON JACKSON.

Reindeer account.

Date.		Males.	Females.	Fawns.	Total.
1897.					
June 30	Total in herd	62	125	106	293
Dec. —	Brought by Government for Tatpan	.....	4	3	7
	Total	62	129	109	300
	Taken by Government for Martin	3	9	5	17
	Remainder	59	120	104	283
	Died during the half year	4	1	9	14
	Remainder	55	119	95	269
1898.					
June 30	Number of old deer	107	160	.....	267
	Born this year	.....	.....	132	132
	Total	107	160	132	399
	Fawns died during calving season	.....	.....	4	4
	Total	107	160	118	395
	Belong to each individual:				
	Fort Adams and Golovin Bay	80	122	98	300
	Okitkon	7	8	7	22
	Tatpan	7	11	9	27
	Moses	13	17	12	42
	Constantine	.....	2	2	4
	Total	107	160	128	395

TELLER REINDEER STATION LOG BOOK, 1897-98.

By T. L. BREVIG.

July 1, 1897: Clear, with a very strong northeast wind. The *Jeanette* and *Karluk* came over from the anchorage. Captain McGregor and wife and Captain Newth visited on shore. The fish party returned at 6 p. m. with 18 salmon, having spent the night at the deer camp. Dr. Kittilsen visited on board the *Karluk* in the evening. Provisions were issued to the Lapps.

July 2: Clear and calm. Mrs. McGregor spent the day on shore. The captains called in the afternoon. Dr. Kittilsen and the Brevigs had supper and spent the evening on board the *Karluk*.

July 3: Mrs. and Captain McGregor and Newth spent the forenoon on shore. The *Karluk* and *Alexander* left for the anchorage shortly after noon. The *Jeanette* tried to beat out with sails, but failed to make it, and anchored off toward Cape Riley. Ojello, Sekeoglook, and Wocksock came in after provisions, but could not leave again, as the high surf made it impossible to launch the boat. Very strong south-southwest wind in the afternoon.

July 4: Cloudy, with strong south-southwest wind. The flag was hoisted early in the morning and salutes fired in the evening.

July 5: Cloudy, with a little rain. Strong south-southwest wind. Preparations were made for a fishing trip up Eaton River.

July 6: Cloudy, with a little rain. Strong south-southwest wind.

July 7: Cloudy and rainy. Strong south-southwest wind. At 6 p. m. Johan, Mikkel and wife left for the fishing ground, taking Wocksock's mother and son and some of the provisions with them. Ojello, with the rest of the provisions, will follow when the wind abates. The *Bear* came in at 11 p. m.

July 8: Cloudy, rainy, and stormy.

July 9: Cloudy, with the south-southwest "perpetuum molilis" in full force. Early in the morning the *Bear* took on board all the arms and ammunition left at the station last year. Capt. F. Tuttle also landed a sheep, to be kept in the herd till in the fall, and left for the anchorage at 7 a. m.

July 10: Partly overcast and calm. Fredrik and Ahlook had come in from the herd during the night and reported 2 deer and 1 fawn

dead. They left again in the afternoon and took Ojello and his provisions along. Two vessels left the anchorage.

July 11: Clear, with a medium strong north wind. The *Narwhal* and *Beluga* came in and anchored outside the station. Several vessels left the anchorage. The fishing party returned with 3½ barrels of salmon.

July 12: In the morning Mr. Bruce came in, and with Mrs. Bruce visited on shore. Captain Larson took supper on shore.

July 13: Partly overcast, with strong northwest wind. Dr. Kittilsen and Brevig called on Captain Tilton in the evening. Aslak and Ahlook came in from the herd.

July 14: Overcast, with strong northwest wind. Captain Larson took dinner on shore, and in the evening Dr. Kittilsen called on board Bruce's vessel. Ahlook went out to the herd in the evening. The *Thrasher* anchored outside Point Jackson in the morning.

July 15: Clear, with strong northwest to north wind. Captain Bodfish was on shore in the morning. The *H. D. Peters* had arrived during the night. The doctor went over to see if there was any mail. The *Bear* anchored at the spit at 5 p. m.

July 16: Light clouds, with strong south-southwest wind. The *Bear* came over to the station early in the morning. Dr. Kittilsen came over with them. After landing the Doctor, the *Bear* proceeded to the watering place beyond Cape Riley. Rumor states that two deserters are at the deer camp.

July 17: Light southwest wind; overcast, with a little rain. The *Bear* came in about noon and after a short stop went over to the anchorage. Dunnak went over in the *Bear* to see his father.

July 18: Partly overcast, with light west wind in the afternoon. Sunday service. Charley came over from the spit in the evening; also Dunnak and his father and family.

July 19: Partly overcast. At 12.30 p. m. Brevig, Johan, Per, and Dunnak went over to the spit in the whaleboat.

July 20: Clear, with light north wind. In the afternoon the *Bear* anchored outside the station and Brevig and party landed. Dr. Call and Lieutenant Cochran called on shore during the afternoon. Dr. Kittilsen spent the evening on board the *Bear*. Mikkel and Fredrik returned from the fishing ground and Aslak came in from the herd late in the evening.

July 21: Cloudy, with medium strong south wind. The *Bear* left at 11 a. m. for the anchorage. A three-masted schooner anchored at the spit at 6 p. m. Many Kings Islanders and Diomedes are encamped on the beach.

July 22: Partly overcast, with a strong northwest wind. The *Volant* came in after dinner, landed Brevig's provisions, and proceeded to the sand spit again. The *Narwhal* and *Thrasher* anchored outside the station.

July 23: Cloudy, with very strong northwest wind. The *Thrasher* went over to the anchorage. Captain Tilton visited on shore in the afternoon. Mathis had a fainting spell in the evening, but soon recovered. The first snow appeared on the mountains in the morning.

July 24: Strong northwest wind and cloudy in the forenoon. Clearing, with lighter wind in the afternoon. At 4 a. m. the *Narwhal* steamed over to the anchorage. Dr. Kittilsen went along to see if the *Jeanie*, which had arrived, had brought any mail. Aslak and Per went out to the herd early in the morning. Fredrik and the Doctor returned after dinner, having received one letter each. The *Bear*, *Balena*, and *Volant* left the anchorage.

July 25: Clear, with light west wind until evening, when a strong southwest wind set in. Dr. and Mrs. Marsh, the missionaries for Point Barrow, called at the station in the afternoon. Fredrik went to the herd.

July 26: Cloudy, with strong southwest wind. The goods to be sent to Unalaklik were packed and marked.

July 27: Clear, with light east wind in the forenoon and west wind in the afternoon. Continued packing and marking of goods for Unalaklik. The herd was moved beyond Cape Riley.

July 28: Overcast, with some rain. Strong south-southwest wind all day.

July 29: Overcast and raining all day, with strong south-southwest wind. Brevig issued rations to the Lapps.

July 30: Clear, with light, variable winds. Per, Aslak, Tautook and wife, Ojello and wife, and Electoona came in for the monthly rations. Johan and Dunnak brought grass for shoe filling. Letters were received from Mr. Lopp.

July 31: Clear in the forenoon, overcast in the afternoon. Aslak reported 3 fawns and 2 deer dead from internal disease and hurts received in lassoing. The herders left with their provisions at 10 a. m.

August 1: Overcast, with light southwest wind. Services in the afternoon.

August 2: Cloudy, with misty rain. Strong southwest wind. Brevig and Dunnak cleaned the store. Johan and Mikkel boxed up some seal oil to take to Unalaklik.

August 3: Overcast, with light, variable winds. Fredrik and Ahlook came in from the herd, reporting all well. Some of the goods to be shipped to Unalaklik were brought down to the beach.

August 4: Cloudy and raining all the afternoon; strong northeast wind during the night. During the afternoon two famished strangers arrived and were fed and housed. A door was put into the main entrance.

August 5: Cloudy, with rain during the forenoon. At 6.30 p. m. the *Volant* anchored outside the station, and Captain Hanson, Rev. and

Mrs. Hanna, Mr. Woods, and Miss Alice came on shore. Rev. Hanna and wife are returning to the States. At 8 p. m. the *Volant* began discharging cargo for the station and receiving cargo for Unalaklik. At 2 a. m. she was through. All the goods were pushed up to the station. Per, Electoona, and Sekeoglook came in from the herd to help.

August 6: Cloudy and raining, with a strong south-southwest wind. The surf was too high to launch a boat. Dr. Kittilsen and Brevig worked checking off goods until 4.30 a. m., rested till 6.30 a. m., and finished the work during the forenoon.

August 7: Cloudy and rain all day and night, with a strong south-southwest wind.

August 8: Medium strong south-southwest wind, with rain all day and night. In the morning the Doctor and Brevig boarded the *Volant* and settled the freight matter. Dr. Kittilsen left for Unalaklik. The two strangers were also on board when she left.

August 9: Clear and calm. The *Volant* was seen moving about around the spit all day, disappearing at 7 p. m. Two boat crews were paid off. Johan, Mikkel, Mathis, and Aslak went after wood in the whaleboat.

August 10: Clear, with a light northeast wind. Per, Electoona, and Sekeoglook went to the herd. Johan and Mikkel went after the canoe to bring it home. Some trading was done and cleaning up around the station.

August 11: Clear, with very light northeast wind. Johan, Mikkel, and Mathis returned with the canoe at 6 p. m., and report fish scarce on the fishing ground. Fixing up accounts has been the order of the day.

August 12: Cloudy, with some rain. Medium strong south wind. Some fish and oil were bought.

August 13: Overcast, with heavy rain all night and forenoon. Strong south-southwest wind, abating toward evening.

August 14: Strong southwest wind, with rain all night and day.

August 15: Ditto. The last of the hull of the *Meyer* went on the beach during the storm.

August 16: Clear, with strong northwest wind. Wood was brought by natives.

August 17: Clear, with medium strong south-southeast to southwest wind. Fredrik and Sandlock came in from the herd in the evening, reporting 1 fawn dead from internal disease and 3 deer slightly troubled with the hoof disease.

August 18: Clear, with light, variable winds. Window lights were put in where broken and the kitchen pipe fixed in T. Kjellmann's room.

August 19: Fair, with light southeast to west wind. Fredrik and Sandlock left for the herd in the morning. Johan and Mikkel took

away the small building added to the lean-to. Brevig painted the door to the main entrance. All the Lapps went hunting in the afternoon.

August 20: Overcast, with strong west wind. A leak in the roof was fixed and the extra pipe holes on the wing were blocked up.

August 21: Cloudy, with strong southwest wind. The pipe in Brevig's kitchen was fixed and the old store fixed up and cleaned out.

August 22: Cloudy, with a very strong northwest wind. Services in the forenoon.

August 23: Partly overcast, with very strong north-northeast wind. The roof on the lean-to was fixed and some painting done around the eaves.

August 24: Fair, with a gale from north-northeast. Wood was brought in the whaleboat. Two canoes arrived from the cape bringing letters from Mr. Lopp. Considerable fish was traded.

August 25: Fair, with light west wind in the afternoon. Four cape canoes arrived, and at 6 p. m. Miner Bruce's vessel anchored outside the station and took on board some of the lumber left on the beach. Captain Larson was on shore in the evening.

August 26: Light southwest wind. Bruce transacted some business with the natives during the day. Mr. Bryan visited at the station. After supper Mr. and Mrs. Brevig called on board. Per, Fredrik, Elektoona, and Ojello came in from the herd, reporting 1 fawn dead and 3 deer sick.

August 27: Clear, with light northeast wind. Mr. Bruce left in the morning; Elektoona and Ojello left for the herd with provisions at noon. The Lapps were out hunting. In the evening two trading canoes came in, and a brisk trade followed in deer legs.

August 28: A fair day, with strong north-northwest wind in the afternoon. Johan, Mikkel, and Fredrik brought home the whaleboat from the herd. Considerable trading was done in the morning.

August 29: A clear, very nice day. Services in the forenoon. Samuel Kemi's infant daughter was baptized "Inger Maria." Light northeast wind. The visiting canoes left for the fishing ground in the forenoon.

August 30: Clear, nice day, with very light east wind. Dagny Brevig is a little sick. Preparations for leaving for Lapland are indulged in.

August 31: Overcast; in the afternoon calm. Johan, Mikkel, and Fredrik went out hunting. Continued packing.

September 1: Overcast, with light southeast to east wind and light rain in the afternoon. Continued packing.

September 2: Overcast and calm, with light rain. The *Bear* looked for in vain.

September 3: Clear, with variable winds. At 10 a. m. Brevig left for the herd in the whaleboat, with Mikkel as master, Johan, Per, and Mathis as crew, and Mrs. Brevig and daughter, Mrs. Nakkila, and

Brevig's native girl as cabin passengers. At the herd all was well. Six deer were sick, but could follow the herd. The party returned via Nook at 9 p. m. a little cold. Mrs. Nakkila suffered some from seasickness.

September 4: Clear and calm.. Letters arrived from Mr. Lopp. A brisk trade with Kings Island and Diomedes people for deer legs, deerskins, etc. Tautook and wife and Ahlook came in from the herd.

September 5: Partly overcast. Sunday school in the afternoon. A light frost during the night.

September 6: Fredrik, Ahlook, and Tautook and wife went to the herd at noon. Overcast and stormy from northeast to east. Considerable fish traded.

September 7: Cloudy and raining; a strong gale from northeast during the night, abating at noon and changing to southwest.

September 8: Partly overcast, with variable wind.

September 9: Overcast, with a gale from the north all night and day. The coal was carried in.

September 10: Overcast, with a strong north to northwest wind and snow flurries.

September 11: Overcast, with a northwest gale. During the night Fredrik, Wocksock, Sekeoglook and wife, and Mrs. Ojello had come in walking. Natives had ferried them across at Nook. Fredrik reports 2 deer very sick. Rations were issued to the herders.

September 12: Overcast, with light northwest wind. Snow covered the ground in the morning. Mikkel, Johan, Mathis, and Dunnak left for the camp with the herders and their provisions.

September 13: Overcast, with light east wind. In the afternoon the whaleboat returned. The skin of a male deer that had died lately was brought in; one more is very sick. Considerable fish was traded.

September 14: Clear, with medium strong east wind, growing stronger.

September 15: Clear, with a strong northeast wind. Very quiet. The *Bear's* nonarrival is filling many breasts with visions of another winter in Alaska.

September 16: Cloudy, with strong north wind. Johan and Fredrik went out hunting. Samuel, Mathis, Aslak, and Dunnak brought wood.

September 17: Cloudy, with medium strong north wind. Johan, Mikkel, Per, and Fredrik brought wood. Dunnak built a fish rack. Aslak and Mathis gathered "shoe grass."

September 18: Partly overcast, calm. Samuel, Mathis, Aslak, and Dunnak brought wood, and Johan, Fredrik, Per, and Mikkel gathered "shoe grass." Late in the evening the *Bear* anchored out in the bay and W. A. Kjellmann and Dr. Kittilsen came on shore.

September 19: Overcast and calm. Dr. Jackson spent the day on shore settling accounts. During the afternoon Capt. F. Tuttle and

several of the officers of the *Bear* called at the station. A deer was killed by order of Dr. Sheldon Jackson to procure a specimen for the Omaha Exposition.

September 20: Partly overcast, with light northwest wind. Dr. S. Jackson came on shore in the morning, and about noon Mr. W. A. Kjellmann, Aslak, Somby and family, Samuel J. Kemi and family, Mathis Eira and family, and Per Rist boarded the *Bear* to go back to Lapland. Dr. Jackson also took five girls and one boy with him to the Carlisle School. The *Bear* left shortly after dinner.

September 21: Overcast, with medium strong northwest wind. Some trading done.

September 22: Clear, with light northeast wind. Letters arrived from Mr. Lopp. In the afternoon Johan, Mikkel, and Dr. Kittilsen went up into the lakes.

September 23: Clear, with occasional snow flurries, light, variable winds. Many canoes left in the morning. One canoe arrived from the cape with letters from Mr. Lopp with requisitions for supplies for his herders. Dunnak repaired the storehouse.

September 24: Partly overcast and calm. Dunnak commenced repairing sleds. Some trading done.

September 25: Overcast and calm, snowing and thawing all day. At noon Wocksock, Tautook and wife, and Sandlock came in from the herd for their provisions and reported 2 male deer dead from internal diseases. Moss is laid up.

September 26: Partly overcast, thawing a little. The herders left in the afternoon. At 4 p. m. Charley arrived.

September 27: Partly overcast. Dunnak repaired sleds. Two boat loads of wood were brought in.

September 28: Overcast, with strong northeast wind. In the afternoon Charley sold 12 deer to the station. The doctor and party returned in the evening.

September 29: Clear, with very strong northeast wind, and cold. Johan and Mikkel started making sleds.

September 30: Clear and nice, with light northeast wind. Charley left in the morning. Several fishing canoes came in. T. Kjellmann moved into Kummuk's house.

October 1: Clear, with a medium east strong wind. Fredrik and Elektoona came in from the herd late last night, reporting 1 old female deer dead from the foot disease. Elektoona is sick from diarrhea. Th. Kjellmann was moved into Kummuk's old cabin in the evening.

October 2: Clear, with a medium strong east wind. Fredrik and Elektoona left for the camp at noon. All hands are busy making and fixing sleds and preparing the house for winter.

October 3: Clear, with northeast to east wind. Th. Kjellmann received the sacrament in the afternoon.

October 4: Clear, with strong northeast to north wind. At 8 a. m. Dr. Kittilsen, Mrs. Brevig, Mikkel, Dunnak, and Tautook left for Cape Prince of Wales in the whaleboat. Some wood was bought.

October 5: Clear, with strong north-northeast wind.

October 6: Clear, with strong northeast wind. Double windows were put in. Johan is making sleds.

October 7: Partly overcast, with very strong north-northeast wind. Sled making.

October 8: Overcast, with light east to northeast wind. Some snow had fallen during the night; raining in the evening.

October 9: Overcast, with very light east wind. Raining hard all day.

October 10: Overcast, with light north wind. At 6 p m. the Doctor and party arrived from the cape, having left there yesterday at noon.

October 11: Overcast, with a medium strong north wind. Dunnak and Tautook left for the herd in the whaleboat.

October 12: Overcast, with light rain in the afternoon. At noon Fredrik, Dunnak, Ahlook, Elektoona, Nootahk, and Ahgelena came in from the herd. In the evening Fredrik and Ahgelena, and Ahlook and Nootahk were married, and a "spread" given them in the superintendent's office. One fawn was reported dead from the loss of a hoof some time ago.

October 13: Overcast and raining nearly all day. A light north wind in the evening. At noon Fredrik and wife, Ahlook and wife, and Elektoona left for the herd with part of the month's rations.

October 14: Sleet and snow, with a strong north wind in the evening.

October 15: Snow flurries, with strong northwest wind. At 4.30 p. m. Wocksock, Tautook, Sekeoglook and wife came in from the herd with both boats, having started yesterday.

October 16: Overcast, with medium strong northwest wind. In the morning Dr. Kittilsen, Johan, Mikkel, and Dunnak left for Point Spencer to get sled material. At noon Wocksock, Tautook, and Sekeoglook left for the herd with their food.

October 17: Clear, with light southeast wind in the afternoon.

October 18: Overcast, with strong north wind. The Doctor and party returned at 11 a. m.

October 19: Overcast, with strong north wind and snow flurries. Sled making all over. The Doctor started in making a sled.

October 20: Overcast, with strong north wind and snow flurries.

October 21: Overcast; calm, with a little snow. A thin layer of ice had formed on the bay, but was broken up by a light north wind in the evening. Fredrik and Ahlook came in from the herd with deer, having crossed Grantley Harbor on the ice.

October 22: Overcast and snowing all day, with a brisk north wind. Fredrik and Ahlook left for the herd in the morning. The Doctor finished his sled in the afternoon.

October 23: Clear, with a light east wind.

October 24: Overcast, with light east to north wind.

October 25: Overcast, with light northeast wind and snow flurries. Late last night Ahlook, Sekeoglook, and Elektoona came in with 5

deer, and this morning at 10 a. m. the Doctor, Mikkel, and Johan left for the herd on the way to Charley's place to get the deer in his herd that belong to the Government. Tautook will go with them from the herd. The three herders went back with them.

October 26: Overcast, with medium strong east wind.

October 27: Clear, with strong east wind during the night, medium during the day. Early in the morning the mother of the twins now with Bruce died.

October 28: Clear, with strong north-northeast wind, very strong in the evening. At 7 p. m. Fredrik and Sandlock came in with the carcass of a male deer that was hurt in training and killed the 27th. They also brought the skin of a bull that had died from the foot disease.

October 29: Clear, with a gale from north-northeast all night and day. Rations were issued to the Lapps.

October 30: Overcast, with medium strong north wind. Fredrik and Sandlock left for the herd at 10 a. m. A young man who had sometimes attended school died in the farther village during the night.

October 31: Overcast, with medium strong northwest wind. Some sickness prevails among the natives.

November 1: Overcast, with light east wind. Three sleds came down from the lakes with whitefish to trade.

November 2: Clear, with light east to northeast wind. In the afternoon the Doctor and party returned with Ahlook and Wocksock to take the deer back. The herd from Charley's is now with the main herd.

November 3: Cloudy, with very strong north-northeast to north wind; cold and blustering.

November 4: Cloudy, with strong northeast wind during the night and forenoon; calm in the afternoon. Snowing all day.

November 5: Cloudy, with light southeast to southwest wind; a gale during the night. The sick people in the village are getting better.

November 6: Cloudy, with light southeast to southwest wind; strong gale during the night. Dunnak's wife is sick.

November 7: Partly overcast, with light variable winds. Dunnak's wife is very sick. Late in the evening Ahlook came in from the herd to get the Doctor, as Ojello and Wocksock's wife were sick.

November 8: Partly overcast; very light northeast wind. At noon Dunnak's wife died. Dunnak's father arrived at dark. At 6 p. m. the Doctor arrived, having moved the herd across the ice to the north side of Grantley Harbor. Sekeoglook came in.

November 9: Partly overcast, with light northeast wind. A coffin was made and the body put in it to-day. A picket fence is being made to put around the grave. Elektoona came in from the herd reporting all well. The bay was frozen over this morning.

November 10: Strong northeast wind. Clear. Dunnak's wife was

buried in the morning. The coffin was placed about a foot above ground with a fence around it. The Doctor is finishing a new sled.

November 11: Overcast. Johan and Brevig left for the winter camp at 10 a. m., and arrived there at 9 p. m. through a heavy snowstorm. The next day was so bad, raining and snowing, that they did not venture to return, but spent the day in camp.

November 13: Clear and calm. Johan and Brevig arrived at 3.30 p. m., having left the camp at 7.30 a. m. Dr. Kittilsen issued rations to the native herders. Ojello and Sekeoglook are at the station under the Doctor's care. The herders' wives are making tents for the winter's trip with the herd to Unalaklik. The storm yesterday had broken up the ice on the bay.

November 14: Cloudy, with strong southeast to southwest wind; mild.

November 15: Cloudy, calm, mild. Tent making the order of the day.

November 16: Overcast, with slush and mist; coughing is the rule.

November 17: Cloudy, with snow flurries. In the evening the Doctor, Johan, Mikkel, Tautook, and Ahlook left for Cape Prince of Wales with a herd of deer to get the deer from the mission herd that belonged to Charley and Kummuk and had been bought by the station. Charley arrived just after the Doctor had left. Fredrik went back to the herd.

November 18: Clear, with a very light northeast wind. Ahlook came back at noon, claiming to be too sick to go to the cape. The tents are about ready.

November 19: Overcast and snowing. Elektoona came in from the herd sick. Ahlook went out to the herd.

November 20: Cloudy, with a strong southeast wind; rain and sleet. Some fish were traded. The sick are the same.

November 21: Strong southeast wind, with rain all night and day. The bay is nearly clear of ice. Sekeoglook and Tautook's wife and Wooksock's mother left for the herd in the morning.

November 22: Overcast, with rain and sleet all day. The sick are the same. It seems that a relative of la grippe is making a professional call.

November 23: Clear, with a medium strong east-northeast wind. The ice is loose from the shore. Charley left in the morning, having sold 2 deer.

November 24: Fair, with strong east to northeast wind. The bay is about cleared of ice. Fredrik and Wocksock came in from the herd, reporting 1 sled deer killed by stray dogs Monday night. Elektoona had left the station last night, and is now stopping in an Eskimo house. Samuel's dog was shot, as he was seen among the pack that killed the deer.

November 25: Overcast, with a gale from east-northeast all night

and day. The sick are getting better. The day was observed by hoisting the flag and eating a good dinner.

November 26: Cloudy and mild, with strong east wind. The Lapps received their rations and some fish was traded.

November 27: Clear and calm. Two sleds arrived from the lakes.

November 28: Clear and calm until in the afternoon, when a strong north-northeast wind cleared the bay from ice. Some natives brought in the small boat from Cape Riley.

November 29: Clear, with a strong north-northeast gale all night and day. The Doctor and party returned with the deer at 6.30 p. m. Bad weather had made the outward trip last one week. The return trip was made in two days.

November 30: Clear, with light northeast to east wind. Tautook went out to the herd and came back in the evening. Fredrik was in after fish.

December 1: Clear, with a light east wind. At dusk the Doctor, Johan, Mikkel, Dunnak, Mrs. Wocksock, and two sons went out to the herd to divide the herd to be given to Wocksock, Tautook, and Sekeoglook from the main herd. Four sleds arrived from the cape.

December 2: Clear, with a northeast gale all night and day. Tautook was in and got clothing to go to Ahgeeopuk. Some deerskins were traded.

December 3: Partly overcast, with strong north-northeast wind. Early in the morning Brevig went out to the herd to help tally the deer divided off. Each apprentice was loaned 25 deer, making, with the deer earned as herders, for Wocksock 31, Sekeoglook 37, and Tautook 51, a total of 119 deer; 8 disabled female deer that were unable to make the long trip with the main herd were left. Brevig, the Doctor, Johan, and Mikkel returned to the station at 4 p. m.

December 4: Calm, partly overcast. Johan and Mikkel went up toward the mountains after harness wood.

December 5: Partly overcast, with strong northeast wind. A deer was reported dead some days ago. The Lapps had supper with Brevig.

December 6: Clear, with strong northwest wind.

December 7: Overcast, with strong north wind and light snow all day. Charley's brother came in late last night.

December 8: Cloudy, with a strong north wind; snowing and drifting. Tautook came in from the winter camp, reporting 1 of the station deer dead from internal disease.

December 9: Clear and calm. Fredrik received six weeks' rations. Dunnak cut his hand, so he can not work to-day. All hands are busy making harnesses. Three of Mr. Lopp's herders arrived at dusk with 5 deer. Keok is going to Eaton Station with the herd to practice driving. Fredrik left for the herd.

December 10: Overcast and mild. Fredrik came in with the car-

cass of a deer that had broken its leg running and been butchered. Th. Kjellmann bought the carcass. One fawn had died.

December 11: Clear, with light northeast wind. Two months' rations were issued to the natives, and a general bustle of preparation is going on.

December 12: Overcast, with an east-northeast gale and blizzard.

December 13: Overcast, with southeast wind; heavy snow during the night. Ojello and family were sent to the herd ready for the trip. All hands are busy preparing for the journey to Unalaklik. Open spaces between the floes of ice on the bay.

December 14: Overcast and mild, with light south-southeast to south wind. In the morning Mr. Lopp's two herders left for home. Continued packing of sleds and preparing for the start.

December 15: Fredrik and Ahlook came in with deer and took loaded sleds out to the camp. Dunnak, Elektoona, and Keok left for the camp with their belongings.

December 16: Overcast, with gusts of wind from northeast. At 3 p. m. the emigrants left for the camp, intending to leave there on Friday for the new station at Unalaklik, and solitude reigns where "Sami Gela" (Lapp language) held court before.

December 17: Overcast, with southeast to east wind. Brevig went out to the herd with some papers needed; also to see if anything was needed out there. On consultation it was found best to leave Ojello, wife, and child at the station, as he had complained of being sick and unable to do any walking. It was feared that he would get worse and be an incumbrance on the rest. Two deer died recently from injuries received in the herd.

December 18: Overcast, with strong east to southwest wind all day and night. Some snow falling. Ahlook brought in Ojello, wife, and child, who were put in the house vacated by Johan. Th. Kjellmann's servant left him; scarcity of food was given as the cause. The bay still open in spots.

December 19: Calm and foggy; very mild. A long, lonesome day.

December 20: Clear in the afternoon, with medium strong north wind and some drifting. Colder; —5° at dark.

December 21: Clear, calm, cold; —8° to —10°.

December 22: Ditto.

December 23: Ditto. Food is becoming scarce, as the tomcod fishing is a failure.

December 24: Ditto. Some nuts, fruit, and knicknacks were given to the children in the schoolhouse.

December 25: Strong north wind; clear and cold. Drifting some. Very quiet.

December 26: Cloudy, calm, cold.

December 27: Clear, with strong north wind and drifting.

December 28: Clear, calm, cold; —20° to —23°.

December 29: Overcast, with light east wind; —20° to —25°.

December 30: Overcast and mild; snow during the night.

December 31: Cloudy, calm, mild; + 10° to + 22°. Good-bye 1897!

January 1, 1898: Cloudy, calm, and mild. Rumor of the theft of a saw, an ax, and sleeping bag from the camp of the moving party is freely circulated, giving the names of three parties as the culprits. A man and wife were in, telling about something they had seen sailing toward the sky with two men in it, describing the balloon.

January 2: Overcast and calm. Snowing during the night.

January 3: Partly overcast and calm; growing colder.

January 4: Overcast, with a little snow, and light southeast wind. At 4 p. m. Tautook and Sekeoglook came in with ten loads of moss. They reported a Government female deer dead from internal disease and swollen feet.

January 5: Partly overcast and mild.

January 6: North-northeast gale during the night and forenoon. Overcast, with a little snow; calm in the afternoon. Tautook and Sekeoglook left for the herd in the evening with their provisions.

January 7: Clear in the afternoon; strong northeast wind with some drifting.

January 8: A northeast gale during the night and day. Several natives have left for the sealing ground.

January 9. Partly overcast with a heavy northeast gale all night and day.

January 10: Partly overcast, with strong northwest wind with some snow. Natives complain of heavy snow to travel in. Letters arrived from Mr. Lopp in the morning.

January 11: Clear and cold. Medium strong northeast wind. A few seals are reported shot.

January 12: Clear; light northeast wind. Wocksock and eldest son, Sekeoglook and wife came in at 8 p. m. Wocksock reports one female belonging to the Government strayed into the herd a few days ago, probably a deserter from the main herd.

January 13: Clear, with a medium strong northeast wind. The herders left in the morning.

January 14: Clear and cold, with medium strong northeast wind; —24°.

January 15: Clear and cold; —25°. The first seal was brought in to-day. Medium strong northeast wind.

January 16: Ditto; another seal.

January 17: Partly overcast, with strong northwest wind; —25° all day. Letters arrived from Dr. Kittilsen, dated December 21, 1897. A native said he had seen a male deer with a bell on up near the upper village on the Ko vee rock, but had not traced it.

January 18: Partly overcast, with a gale from the north; —26° to —30°. Two sleds left for up the lakes.

January 19: Overcast, with very light north wind; —15° to —25°.

January 20: Calm, clear, cold; —25° to —31°.

January 21: Clear, calm, cold; —35° to —38°. At 11.30 a. m. Lieut. D. H. Jarvis, Dr. Kittilsen, and Mikkel arrived. Lieutenant Jarvis is on the way to Point Barrow to relieve the wrecked seamen at that place. The Cape Nome herd is following, in charge of Dr. Call, and he will take the cape herd also. He will proceed from here with dogs to Cape Prince of Wales, to make arrangements with Mr. Lopp.

January 22: Strong east to southeast wind; cold, but growing milder. Lieut. Jarvis had made all preparations for an early start, but the natives would not go in the storm.

January 23: Variable winds; —20° to —7°. Lieutenant Jarvis left at 8 a. m. with 1 sled and 12 dogs with 2 natives.

January 24: Clear, with strong north wind and drifting; —26° to —18°. Mikkel is making a stove for the return trip.

January 25: Clear, calm, cold; —22° to —26°. Tautook came in from the herd with 3 deer and 2 sleds to take out 2 deer that the doctor will leave in this herd. Tautook reports one of the Government females very sick.

January 26: Clear, cold, calm. Kummak arrived with letters from Lieutenant Jarvis.

January 27: Lieutenant Jarvis having requested to take Tautook with him to Point Barrow, Tautook left for the herd to bring his family into the station; —31° to —15°; clouding over in the evening. At 4 p. m. Dr. Call arrived with Charley's herd. A storm had scattered the deer, and he had had a severe trip.

January 28: Overcast, with gale from the northeast. Dr. Call made preparations to leave with the herd in the morning.

January 29: Cloudy and calm; mild. Dr. Call and party left with the herd shortly after noon, and Dr. Kittilsen and Mikkel left for Golovin Bay at 3 p. m.

January 30: Cloudy with southeast wind. Tautook and wife and Sekeoglook arrived at noon. Tautook left for the cape at 2 p. m., but returned at dusk, as he had forgot his extra-heavy artega. Three sleds arrived from the cape with orders for barter goods from Lieut. D. Jarvis.

January 31: Overcast, with a gale from the south; snow and slush. Tautook left early in the morning. All day was occupied in filling orders from Lieutenant Jarvis, brought by Cape Prince of Wales natives. Some seals were bought.

February 1: Calm; foggy in the morning, snowing in the afternoon. Sekeoglook left for the herd with 6 deer in the morning. Several orders were received from Lieutenant Jarvis.

February 2: Overcast with a strong north-northeast wind and drifting.

February 3: Calm, cloudy, with some snow. Rumors of distilling liquor by the Eskimos were in circulation late last night.

February 4: Cloudy, calm, mild; +28°.

February 5: Clear, calm all day.

February 6: Overcast, with strong north wind, and drifting. Charley's brother, Kummuk, and the dog team from here that went up with the herd had arrived during the night with letters from Lieutenant Jarvis, telling that the herd would start from the deer camp February 3. Reports of distilling and of several parties being drunk in the village is circulating.

February 7: Overcast, with strong northwest wind, and drifting all day and night. Goods on Lieutenant Jarvis's order were delivered to Kummak, Akla, and Charley's brother. Wocksock and wife came in very hungry and cold, having been storm bound two days on the way with nothing to eat.

February 8: Overcast and storming from northwest; very cold.

February 9: Clear, calm, very cold; —26° to —30°. Charley's brother left for home with a load of flour. Several sleds arrived from the cape with orders and to trade.

February 10: Clear, cold, and calm, and swarming with cape natives with orders from Lieutenant Jarvis; —26° to —30°.

February 11: Clear and cold; —24° to —28°. Light north to north-northeast wind; only one sled from the cape.

February 12: Clear, calm, cold; —17° to —27°.

February 13: Ditto; everything.

February 14: Medium strong north to northwest wind, partly overcast; —14° to —21.°

February 15: Overcast, clearing in the evening. Light north wind; —21°.

February 16: Clear, with medium northeast wind; —21° to —31°.

February 17: Clear, calm, cold; —24° to —33°.

February 18: Clear, calm, and cold; —26° to —34.° Four sleds arrived from Kotzebue Sound with orders and letters from Lieutenant Jarvis, dated up to February 11. Some trading was done with them.

February 20: Clear, with light east wind. Akla, one of the most promising schoolboys, died in the morning. He was buried in a coffin with his Bible.

February 21: Clear, with light northeast wind. An old woman died in the village in the morning. Mary had arrived for her goods and prepared to leave in the morning.

February 22: Overcast, with strong east wind and snowing all day.

February 23: Overcast, mild and calm in the forenoon; clearing up, with a north wind and colder in the evening. Mary left in the morning.

February 24: Overcast, with strong north to northeast wind; cold, -18° to —20°.

February 25: Overcast, with strong southeast wind; —18° to —24°.

February 26: Cloudy, with light east wind and snowing; milder.

February 27: Clearing in the forenoon; −15°. Three sleds arrived from the cape with letters from Mrs. Lopp and news from the expedition.

February 28: Overcast, with strong southeast wind and drifting; mild.

March 1: Overcast, with a gale from south-southeast all night and day.

March 2: Clear and calm until evening, when a heavy gust of wind from southeast, lasting two hours, enlivened things.

March 3: Calm and nearly clear; very fine day.

March 4: Calm, cloudy, mild; +27° to +36°.

March 5: Overcast, with light north wind; a little snow.

March 6: Overcast, with a gale from north-northeast; drifting; cold.

March 7: Cloudy, with a very strong gale from north-northeast during the night; drifting.

March 8: Cloudy, with a very strong north-northeast wind twenty-four hours.

March 9: Cloudy and snowing; a gale from the north. Blizzard.

March 10: Clearing in the evening, with a strong north wind.

March 11: Clear, with a gale from the northeast night and day; drifting badly. Wocksock came in from the herd, reporting all well. Letters arrived from Mrs. Lopp.

March 12: Clear in the morning; clouding over, with a northeast gale in the evening. Wocksock and son left for the herd.

March 13: Clear, with a light northwest wind in the forenoon; a gale in the afternoon.

March 14: Overcast, with strong northeast wind. A trader from Mr. J. Dexter visits in the village.

March 15: Snowing, with strong north to north-northeast wind.

March 16: Snowing, with a medium strong south wind all day.

March 17: Calm and snowing.

March 18: Overcast; light westerly winds.

March 19: Overcast, with strong east wind. Sekeoglook came in for seal. Tautook's wife and brother went out to the herd to stay during fawning season.

March 20: Cloudy, snowing, mild, calm.

March 21: Partly overcast, mild, calm.

March 22: Cloudy, calm, mild. At 6 p. m. Dexter, with two men and two sleds, arrived on a trading expedition.

March 23: Overcast, with a strong southeast wind in the afternoon and night; drifting badly. Letters arrived from Mrs. Lopp.

March 24: Overcast in the forenoon; clear in the afternoon, calm and mild.

March 25: Partly overcast, calm and mild. Netaxite left for the cape in the morning, and Dexter left about 10 a. m.

March 26: Overcast and mild, with a very strong southeast wind.

March 27: Overcast, with strong southeast wind in the night; abating.

March 28: Overcast, calm, mild.

March 29: Overcast, snowing and blowing from the north in the afternoon.

March 30: Overcast, strong northwest wind; drifting badly.

March 31: Clear and calm in the forenoon; strong north wind in the afternoon. Letters arrived from Mrs. Lopp.

April 1: Clear and cold, with a medium strong north wind.

April 2: Clear, with a strong north wind all night and day.

April 3: Partly overcast, strong north wind; drifting.

April 4: Fair and calm, with a light snow during the night.

April 5: Partly overcast, with strong north wind. Sekeoglook and wife and Tautook and wife came in from the camp for provisions, reporting all well.

April 6: Clear, with strong north wind, and drifting. Sekeoglook and party left for the camp at noon. Two male deer were reported dead—one of Tautook's and one of Sekeoglook's. Internal disease was the cause.

April 7: Clear and nearly calm. The flour supply is just enough for the herders. The scarcity of food makes the demand for flour and biscuits great.

April 8: Clear, with light east wind.

April 9: Clear and calm; several sleds arrived from the cape, and letters from Mrs. Lopp.

April 10: Clear and calm.

April 11: Clear, with a light southeast wind in the afternoon.

April 12: Clear, with a strong north-northeast wind at sunset.

April 13: Clear, with very strong northeast wind all night and day; drifting badly. Soqueena arrived from the cape for supplies at 4.30 p. m., making the trip after 7 a. m. News of the expedition was listened to.

April 14: Overcast in the afternoon, with a strong northeast wind in the forenoon. In the evening southeast wind and clear. Soqueena left at 5 a. m.

April 15: Clear, fine day, with a strong northeast wind in the afternoon. At noon Wocksock arrived with 4 deer for oil and seal. He had left with 5 deer, but had been attacked by dogs, and 1 was chased away, caught in the halter, and strangled. The deer was his own. Two fawns born.

April 16: Overcast, with a light snow in the afternoon.

April 17: Overcast and calm, with a trace of snow.

April 18: Ditto.

April 19: Overcast and snowing in the afternoon; light east to southeast wind. A sled arrived from Golovin Bay.

April 20: Partly overcast, with strong variable winds.

April 21: Clear in the forenoon; overcast in the afternoon; calm. Some sleds came in from the lakes.

April 22: Clear, with medium strong northwest wind.

April 23: Clear and calm. A sled arrived from up the coast. A young man died in Nook.

April 24: Snowing all day. The toothache prevails.

April 25: Overcast and calm.

April 26: Light clouds. Light north-northeast wind. Cold. The kitchen pipe was bandaged.

April 27: Partly overcast, with a very strong north-northeast wind in the afternoon; drifting badly.

April 28: Clear, with strong northeast wind in the afternoon; drifting badly. Sekeoglook came in late last night and left this morning. He reports many fawns born and 2 dead.

April 29: Clear, with a strong northeast wind; cold.

April 30: Clear; strong north-northeast wind during the night and forenoon; calm in the afternoon; —5°.

May 1: Bright and calm, but cold; —12° to +15°.

May 2: Overcast, calm, cold; —8° to +20°.

May 3: Clear, with a brisk east wind in the afternoon. Wocksock came in in the morning, reporting 71 fawns born and 3 dead. At noon he left for the camp. Brevig also went out to the herd.

May 4: Arrived at the camp in the morning, and the day was spent looking over the herd. The deer were all well. Three more fawns were born while there.

May 5: Calm and clear. About midnight Mr. N. O. Hultberg and D. Libby came into the camp from a prospecting trip. Gold had been discovered and claims staked out. In the morning they and Brevig with Sekeoglook proceeded to the station, where they arrived at 8 p. m.

May 6: Clear and calm. The day was spent in trading and preparing for a trip to Golovin Bay.

May 7: Clear and calm. Tautook arrived here at 4 p. m. from his Point Barrow trip and reports all well and that the deer will not be killed. He left for the camp at 7 p. m., Netaxite going with him. Mr. Libby, N. O. Hultberg, and Brevig also left for the herd at the same time, Brevig taking the mail from the north to be forwarded to Golovin Bay, as there were stringent instructions that it must reach St. Michael before June 22. Netaxite brought the news of Kummuk's drowning.

May 8: Clear, with a light northeast wind.

May 9: Overcast, with a strong northeast wind; drifting all day.

May 10: Snowstorm, with very strong northeast wind.

May 11: The same storm, but milder. Mr. Hultberg's deer was found dead in the morning. It was brought into the station and skinned.

May 12: Storm continues. Everything is weighed down with snow.

May 13: Clear, with a strong northeast wind. Ojello is fixing his umiak.

May 14: Partly overcast, with a strong north wind; thawing.

May 15: Clear, with a strong north wind. Antisarlook returned from Golovin Bay, and a sled arrived from Mary for provisions.

May 16: Clear and mild; thawing a little in the sun. The snow was shoveled from the roof. Th. Kjellmann is sinking fast.

May 17: Overcast and mild.

May 18: Overcast, snowing and blowing. Some snow shoveling was done. Nearly all the natives have abandoned their winter houses and are moving toward the sand spit.

May 19: Overcast, with a cold northeast wind.

May 20: Clear and calm; a feint at thawing.

May 21: Partly clear; calm.

May 22: Partly overcast, with a strong northeast wind. Brevig and Sekeoglook returned at 10.30 a. m., having made the trip from Golovin Bay with dogs in five and one-half days, stopping eighteen hours at Charley's place.

May 23: Clear, with a light north wind; a faint endeavor at thawing. Sekeoglook and Ojello went out to the herd in the morning. Charley's sled also left for home. A little trading was done.

May 24: Partly overcast; thawing a little. Mr. Lopp's dog team and one herder came down in the morning and left in the evening. Ojello also returned toward evening.

May 25: Partly overcast and thawing.

May 26: Clear and calm; thawing. Th. Kjellmann seems to be drawing near his end, being unconscious all day and unable to speak.

May 27: Overcast, with a strong northeast wind during the night. At 5 p. m. Th. Kjellmann died, and was washed and dressed. The last days he had taken no food, and the last two days he had not been able to speak.

May 28: Clear and calm and very warm. The water is commencing to flow in the rivers. Tautook and Awklahrahook came in early in the morning. Tautook was kept at the station to help bury the old man. Ojello made a coffin. Three fawns were reported born since I visited the herd, making 77 in all. No fish caught yet.

May 29: Overcast and calm; a light rain in the evening.

May 30: Calm; at times overcast. Th. Kjellmann was buried in the afternoon. Tautook left for the herd late in the evening with a month's provisions.

May 31: Overcast and calm; rain during the night.

June 1: Overcast and calm, with a light frost. Ojello has fixed up his umiak in good shape. Only some old women, young children, and an old man are encamped on the beach.

June 2: Overcast and calm. Brevig and Ojello went out hunting in the evening and returned at 10.30 p. m. with 14 birds.

June 3: Cloudy, with strong south-southwest wind all night and day; snowing in the evening.

June 4: Cloudy, with south-southeast wind all night and day.

June 5: Light clouds; calm.

June 6: Clear, calm, nice day.

June 7: Clear and calm. Brevig and Ojello went out hunting in the morning, but Brevig had to return in the afternoon as Wocksock's youngest son was sick and sent for medicines. The herd is now encamped near Nook, on the south side of Grantley Harbor.

June 8: Clear and calm; a heavy fog in the evening and night. Ojello and Neelank returned in the evening.

June 9: Clear, calm, warm.

June 10: Partly overcast, with light south wind, changing to strong northeast in the afternoon, with a light rain. Packing all day.

June 11: Light clouds, with light northeast winds. Continued packing.

June 12: Clear and calm; +87° in the sun.

June 13: Clear, with light west wind. Sekeoglook had come in from the herd during the night and reports 3 fawns dead and 3 born, 1 of his own a stillborn and 2 of Tautook's. Ojello went out hunting.

June 14: Clear, with a gale from the north-northeast in the evening; calm in the forenoon; packing and cleaning.

June 15: Clear and calm; packing and cleaning up. Wocksock was in from the herd and reports all well. The ice is loose from the shore.

June 16: Partly overcast, with fog at times. Cleaning, clearing, packing, etc. The ice is moving around with the tide.

June 17: Clear and calm. Nets were overhauled; but little ice in sight.

June 18: Clear and calm; but little snow left before the house. The ice is moving in the bay.

June 19: Clear and calm.

June 20: Clear, with a strong north-northeast wind during the day. Wocksock, wife, son, and daughter came in from the herd at noon and report all well. A general clearing up. The ice has gone to sea; only a small floe is seen hugging the south shore.

June 21: Partly overcast; light west wind. The ice has almost vanished.

June 22: Partly overcast, with a very strong northeast wind in the afternoon. The herring net was set in the evening.

June 23: Partly overcast, with a very strong northeast wind. No ice in sight. Clearing.

June 24: Clear and calm. A two-masted schooner anchored outside the spit.

June 25: Clear, with a light west wind. A small sloop, with three miners on board, came in in the forenoon bringing tidings from Klondike and of the war with Spain.

June 26: Clear, with light west wind. The miners left at 10 a. m. A two-masted steamer and a three-masted sailing vessel anchored at the anchorage.

June 27: Clear and calm. Sekeoglook came in from the herd, reporting all well at the herd and requested nets. Wocksock and family went out with him in the whaleboat. A two-masted steamer and a brig anchored at the spit—5 vessels in all.

June 28: Clear and calm. Several boats came in from the anchorage with miners, some landing their provisions and all going prospecting. Some news was gathered.

June 29: Partly overcast, with calms and gusts of wind. A steam launch and several boats went into the lake region to prospect. The *W. Bayliss* anchored at the spit. Many of the miners booked for Kotzebue Sound seem to have settled on this region to prospect in.

June 30: Partly overcast; calms and variable winds. Some 50 to 60 miners went into the lake region to prospect. Mrs. Captain McGregor came in from the spit in a native canoe to visit Mrs. Brevig.

POINT BARROW RELIEF EXPEDITION.

REPORT OF CAPTAIN TUTTLE, REVENUE-CUTTER SERVICE, TO THE SECRETARY OF THE TREASURY.

UNITED STATES STEAMER BEAR,
Seattle, Wash., September 15, 1898.

SIR: I have the honor to report the arrival of the U. S. S. *Bear* at Seattle, Wash., at 11 a. m. September 13, 1898, from Point Barrow, Alaska, with the members of the overland relief expedition and the officers and seamen from the wrecked whalers *Orca*, *Jesse H. Freeman*, *Rosario*, *Navarch*, and schooner *L. J. Kenney*, of Seattle, wrecked at Point Hope, Alaska, August 19, 1898, and I respectfully submit the following report of the movements of the *Bear* since my letter of June 23, dated at St. Michael.

Such articles as Lieutenant Jarvis had mentioned as being indispensable were, so far as obtainable, procured at St. Michael, and Rev. Father Barnum, of the Catholic Mission, came on board at that place for passage as my guest. Having information that the mail was to be delayed at Unalaska for an indefinite time, I concluded to start for the north, and left St. Michael at 4.50 p. m. July 7.

On the 8th a short stop was made at Kings Island, where the natives were found in good condition. From Kings Island proceeded to Port Clarence, which was reached at 5.50 a. m. July 9. Four vessels of the whaling fleet and three for Kotzebue Sound that were found at anchor here were boarded and examined.

On the 10th, while on the way to the watering place, a stop was made at the reindeer station. Rev. Mr. Brevig had given out so much of his provisions on orders of the overland expedition that he was now short himself. I gave him 500 pounds of flour and 5 pounds of tea, credit for which will be given to his bill against the overland expedition. From the reindeer station proceeded to the watering place to the south of Cape Riley, reaching there at 11.30 a. m. The boiler was blown down and watering ship commenced. Boiler was refilled and fresh-water tanks full on the morning of the 12th. Steam was raised, and at 2.05 p. m. got under way for Point Spencer, anchoring there at 4.25 p. m.

During our absence at the watering place the steamer *Thrasher*, from San Francisco, with supplies for the whalers in the north, and, schooner *Bonanza*, with supplies for H. Liebes's trading stations in

the north, had arrived. Mr. Koltchoff, who was landed with the overland expedition at Cape Vancouver, came up on the *Thrasher* and came on board the *Bear* to report. I had heard incidentally while at St. Michael that Lieutenant Bertholf, in obedience to orders from Lieutenant Jarvis, had discharged Koltchoff at St. Michael January 1. Instead of reporting at the reindeer station at Unalaklik, as ordered, he had gone overland with Mr. Tilton, who came down from the wrecked whalers.

Koltchoff said Lieutenant Bertholf had given him a paper—he claimed to be ignorant of its contents—which he had given to Lieutenant-Colonel Randall, U. S. A., commanding at Fort St. Michael, and that Lieutenant-Colonel Randall, with Mr. Shepherd, agent of the North American Trading and Transportation Company at Fort Get There, had sent him to assist Mr. Tilton to carry out the mail. I told Mr. Koltchoff that he had better go to the Port Clarence Reindeer Station and await the arrival of Dr. Jackson, who was daily expected.

On the *Bonanza* were the two natives of Point Hope who had accompanied Mr. Tilton from Point Hope to San Francisco. H. Liebes & Co. had provided for them after their arrival at San Francisco and sent them back on the schooner *Bonanza*. As the ice might prevent the *Bonanza* from getting to Point Hope for some time, transportation was given them on the *Bear*.

At 11.30 p. m., July 12, got under way and stood for Cape Prince of Wales. Anchor was let go off the cape at 5.15 a. m., July 13. Rev. Mr. Lopp and natives came on board. Delivered to them such articles as we had been able to procure at St. Michael. An account of all articles purchased or delivered from the ship's stores, also of what is now due to people in the north on account of services rendered the overland expedition, is being prepared by Lieutenant Jarvis. It can not be finished until Lieutenant Jarvis confers with H. Liebes & Co. at San Francisco in regard to prices. The Liebes & Co. agent at Point Barrow had instructions not to set any prices. That would be done at San Francisco when his account of expenditures to the shipwrecked men reached the office.

At 9.10 a. m., July 13, got under way and stood into Bering Straits. At noon stood to the eastward for Kotzebue Sound, which place was reached and an anchorage made off Cape Blossom at 2.20 p. m. Three barks at the anchorage were boarded and examined. They were loaded with prospectors and their supplies bound for the rivers flowing into Hotham Inlet. A native presented an order from Lieutenant Jarvis, which was filled. I could not learn that there were any more natives on board who had orders, but heard some ashore had them. As it was about 10 miles to the village, I could not wait for them to come off. At 6.20 p. m. got under way and stood for Point Hope. At 6.20 p. m., July 15, anchored off Nelson's trading station, between Cape Thompson and Point Hope. Lieutenant Bertholf reported on

board. He had made Nelson's house his headquarters since his arrival at the station. The two natives brought from Port Clarence were also landed here. Lieutenant Bertholf had carried out his instructions in a manner which met my entire approbation. In addition to caring for the strayed deer, he had destroyed the stills used by the natives in manufacturing liquor, and his presence prevented any of the white residents from entering into the manufacture of it.

At 9.05 a. m., July 16, got under way and steamed for Point Hope, and at 11.05 a. m. anchored off the village. Communicated with Rev. Dr. Briggs, in charge of Episcopal mission. No whales having been taken during the spring whaling, the natives would be very short of food during the coming winter, and nearly all of them had gone down the coast to endeavor to catch a supply of salmon for winter use. At 4.25 p. m. steamed to the Liebes station and anchored for the night.

At 9.45 a. m., July 17, steamed to Nelson's station. Took on board a native who asked to be taken to Point Barrow. At 1.35 p. m. steamed to northward around Point Hope. At 11.16 p. m. passed Cape Lisburne and sighted the first drift ice seen in the Arctic. Laid course to make the land between Point Lay and Cape Beaufort in order to meet any boats Lieutenant Jarvis might have sent from Point Barrow. At 2 p. m., July 18, made land to southward of Point Lay. Steamed along the land in sight of the beach, keeping a good lookout for signals or boat. At 4.20 p. m. anchored off a native village to southward of Point Lay. Natives came on board and reported no white men had passed by.

At 2.15 a. m., July 19, under way to northward. At 6 a. m. sighted a native boat coming off the ice. It came alongside at 6.30. It contained a party from Point Barrow, sent by Lieutenant Jarvis, in charge of Capt. A. C. Sherman of the wrecked steamer *Orca*. The party was taken on board with their boat and the vessel proceeded to within 5 miles of Icy Cape where we come to anchor at 2.35 p. m. on account of heavy ice ahead.

Lieutenant Jarvis informed me that the schooner *Rosario* had been crushed by the ice on July 2; crew all saved. His last information from the vessels to the eastward of Point Barrow was on June 19. At that time they were all right. The *Belvedere* was all right on July 10, but short of provisions, and Lieutenant Jarvis hoped I could get some to her where she lay, at the Sea Horse Islands, some 80 miles from Icy Cape. The men at Point Barrow were all right with provisions to last until August 15. If the *Bear* did not arrive by August 1, he thought it best to start some of them down the coast to meet the vessel.

At 4.35 a. m. July 20, made an attempt to get through the ice to the northwestward. Worked until 2.20 p. m., when the attempt was given up. Stood to the southward until 10 p. m. before getting clear of the ice. At 11.40 p. m. anchored to the southward of Point Lay.

On the 21st fresh northerly winds and drift ice outside of us kept us at anchor throughout the day. At 8.30 a. m., July 22, worked through drift ice to Icy Cape, anchoring there at 12.55 p. m. Ice still heavy to northward and westward. On July 23 there appearing to be little or no change in the ice, concluded to send Lieutenant Hamlet in the native boat to carry provisions to the *Belvedere* and then to proceed to Point Barrow and communicate with Lieutenant Jarvis. At 9.55 a. m. Lieutenant Hamlet started with 400 pounds flour, 96 pounds corned beef, 85 pounds beans for the *Belvedere* and some small stores for Lieutenant Jarvis.

Remained at anchor off Icy Cape until July 26, the ice frequently compelling us to shift anchorage to keep clear. At 4.25 a. m., July 26, the ice appearing to have opened, stood around Blossom Shoals and at noon laid course for Point Belcher. At 6.20 p. m. a dense fog setting in and the water shoaling, came to anchor. At 11 p. m., the fog lifting, found we were off Wainwright Inlet. Got under way and stood along the coast, blowing at intervals. At 2.55 a. m., July 27, off Point Belcher, went behind the ground ice and anchored to await the drifting by of the floe ice. At 6.40 p. m., the ice looking more favorable, stood for Point Barrow, outside of the ground ice. We passed through fields of heavy ice until 11 p. m., then found comparatively open water. Saw the *Belvedere* in Pearl Bay. The ice would not allow us to approach nearer than about 10 miles of her, therefore did not stop. At 5 a. m., July 28, sighted relief station at Point Barrow. Heavy ground ice, with open water inside, extended from Point Shedden to Point Barrow. There being no opening through it, at 8 a. m. made fast on the outside at a point about a mile to the southward of the station, the *Bear* being the first vessel to arrive this season.

Lieutenant Jarvis and a large party came across the ice to the vessel. He had issued rations to the wrecked men until July 30. As we were not entirely prepared to receive such a large party, I directed most of them to remain where they were ashore until the rations were consumed. Twenty-six could be immediately provided for, and they came on board.

On the 29th the steam whaler *Jeannette* arrived and made fast to the ice to the southward of us. The steamers *Fearless* and *Newport* appeared to the eastward of Point Barrow, but could not get around the point on account of the ice. Received news from the *Newport* that she was leaking badly and needed oakum, spikes, and nails to make repairs. These articles were furnished immediately. Nothing was heard of the *Jeanie*, still to the eastward. If it had been known she was out of danger, the wrecked men could have been taken on board and the *Bear* could have started on the return trip at once. As it was, I thought it would not be prudent to leave until I was assured of her safety. On July 30, 66 more of the shipwrecked men came on

board, increasing the number to 97. In the afternoon of the 30th there were large pieces of ice drifting along with the current. Fearing they might strike the vessel and part the mooring lines, got under way and steamed into an indentation in the ground ice, where the steamer *Jeannette* was made fast. A suitable place was found and the vessel moored to ground ice. On the 30th Lieutenant Hamlet arrived. He had delivered the supplies to the *Belvedere* and reported that as soon as a southwest wind came to clear away the ice she would start for Port Clarence for coal. The vessel was in good condition.

On the 1st and 2d loose ice kept drifting in and packed around the vessel where she lay in the indentation in the ice. As there was only a trifling pressure, no danger was anticipated.

At 2 p. m., August 3, came a sudden pressure of the ice; the four forward fasts were carried away and the vessel was forced astern about 5 feet. The pressure then coming against the starboard side, forced the port side against the grounded ice. A point of ice under water abreast the engine room, the weakest place in the vessel, as there are no athwartship timbers there, forced the port side in sufficiently to buckle the engine room floor plates. Men were immediately sent with ice chisels and the ice cut away. As soon as the ice was removed the pressure at that point ceased and the floor plates dropped back into place. The after section of the rudder was sprung about an eighth of an inch. The ice was cut from around the rudder and the pressure on that removed. So far as can be seen (while the vessel is in the water) no material damage was done by the nip. A vessel less strongly constructed would have been crushed at once. When the weather cleared up, it could be seen that the pack had swung in upon the ground ice. Being in the indentation was the only thing that saved the *Jeannette* and *Bear*. Knowing that if a southwest gale sprung up the pack would again move and nothing could save the vessel, I had a large quantity of provisions brought on deck and placed so they could readily be passed to the ground ice in the event of another nip. The ship's papers and books were also packed ready for removal. From the 3d until the 14th of August we remained in suspense. On the morning of the 3d the *Jeanie* came in sight to the eastward of Point Barrow. During the forenoon the *Jeanie*, *Fearless*, and *Newport* got around Point Barrow and came down inside the ground ice to abreast where we were. These vessels were all short of provisions—the *Newport* and *Fearless* short of coal. They were supplied with such quantities of these as could be spared from the *Bear*. Bills for the same have already been sent to their owners. Several days were spent dragging the articles over very rough ice on sleds.

On the 5th, 391 reindeer were transferred to Dr. Marsh, Government school-teacher, who also represented the Presbyterian Mission. As

he was without provisions to maintain the herders, and the camp equipage being worn out, no provision having been made for their support by the mission, the following articles were given from the ship's stores: 1,000 primers, 100 cartridges (.45–.70), 12½ pounds powder, 2 brooms, 50 pounds soap, 2 axes, 1 shovel, a box copper rivets, 1 tent, 1 camp stove, 200 pounds pork, 36 pounds coffee, 176 pounds beans, and 140 pounds sugar.

On the 7th an attempt was made to blast a channel through the ground ice to the clear water inside. After expending 150 pounds of powder (100 pounds borrowed from the *Newport*), the attempt was given up. The effect upon the ice, which averaged 30 feet in thickness, was so slight that sufficient powder could not be procured to blast out a channel. While the blasting was going on, Captain McKenna, of the *Fearless*, got his vessel under way and endeavored to help by ramming the ice. His efforts were, however, useless.

On the 14th the ice off shore commenced to move rapidly to the northward. On the morning of the 15th commenced using small blasts of powder to remove spur pieces of ice near the ship. During the morning a lead broke through the ground ice to the south of us. In the afternoon the ice off shore commenced to disappear, and the pressure on the vessel diminished considerably. There was still several hundred yards of heavily packed ice between us and clear water. A strong northeast wind coming up, all sail was made and thrown aback to help press the vessel off. At 6.15 p. m. the *Fearless* and *Newport* got under way, steamed out through the lead, and came down abreast of us with the intention of pulling out the pieces of ice until we got free. Just as they were commencing a dense fog came up and large quantities of heavy drift ice commenced to come in, obliging them to stop and seek shelter from the ice.

The morning of the 16th the fog lifted, showing clear water about 250 yards distant, and blasting was commenced to clear away the ice. Lieutenant Jarvis and Dr. Call came on board with the part of the *Belvedere's* crew that had been at the station. At 7.25 the *Jeannette* was clear of the ice and steamed to the south. I was surprised to see her leave without offering to assist us. I afterwards learned from Captain Newth that he was ill in his bunk at the time. When informed that the *Jeannette* was clear, he had asked the mate about the *Bear* and had been told by him that she would be clear in fifteen minutes. Under these circumstances he told the mate to take the *Jeannette* to a safe place.

The *Newport* was at anchor off Wallapi, 8 miles distant. When at 10 o'clock Captain Leavit saw that the *Bear* had not moved, he got his vessel under way to come to our assistance. He arrived in time to make fast to one piece of ice, and when that was out of the way the *Bear* was free, and steamed to an anchorage off Refuge Inlet, which was reached at 1.55 p. m. Here the *Fearless* came alongside and was

given 15 tons of coal. Captain Newth, of the *Jeannette*, being too ill to continue with his vessel, was taken on board for passage home. Mr. C. D. Brower, Liebes's agent at Point Barrow, desiring to accompany Lieutenant Jarvis to San Francisco to satisfactorily adjust the claims on account of the shipwrecked men, was also given passage. The deer herders who accompanied Mr. Lopp were also given passage to their homes. The *Fearless* having been north several years, some of her crew desired to exchange with the shipwrecked men who were willing to remain. This they were allowed to do.

At 9.25 a. m. August 17 got under way and stood toward Sea Horse Islands. Fog set in and much drift ice was met. At 4 p. m. stood to south to make the land. At 7 the fog lifted and at 7.06 sighted the whaling fleet at anchor to the eastward of Sea Horse Islands. At 8.55 anchored near the fleet, consisting of the *Alexander*, *Belvedere*, *Bowhead*, *Karluk*, *William Bayliss*, *Fearless*, and *Newport*. The men of the crew of the *Belvedere* brought by us from Point Barrow were put on board their vessel. Six of the shipwrecked men left to join whaling vessels. The *Bear* remained to give the people on the ships an opportunity to prepare mail. On the morning of the 18th two sick seamen were received from the *Belvedere* for transportation to a hospital. At 12.10 p. m. got under way and stood to westward. At 12.40 anchored near schooner *Bonanza*, supply vessel for Mr. C. D. Brower's station. Finding there was an ample supply of potatoes on the schooner, and the supply on the *Bear* being exhausted, I purchased 25 boxes for the crew and shipwrecked men. They will be included in H. Liebes's bill: At 1.55 got under way and stood for Blossom Shoals. At 7 a. m., being around the shoals, laid course for Point Hope, which was reached at 8.30 a. m. the 20th. Communicated with the shore and learned that on the previous day the schooner *Louise J. Kenney*, of Seattle, was in a dangerous position in the breakers near Cooper's Station, 8 miles east of Point Hope. Started immediately for the place. Upon arrival there found the vessel broadside on the beach and in a position where the *Bear* could be of no assistance on account of shoal water. The master of the vessel came on board and said the vessel was full of water and the cargo ruined. He requested passage for himself and crew to Seattle. Boats were lowered and sent ashore for them and their effects. A nasty surf was running and it was with considerable difficulty that they were taken off. Two natives came on board with a communication from Dr. Sheldon Jackson, addressed to whoever had charge of the reindeer at or near Point Hope, directing that the deer be turned over to the two natives, who were Government herders. Got under way and steamed to Nelson's Whaling Station. Lieutenant Bertholf went ashore and directed that the deer be delivered according to Dr. Jackson's request. The three herders who had been in charge of the deer were taken on board for transportation to their homes.

The master of the wrecked schooner informed me that the year's supplies for the three missionaries at Cape Blossom, Kotzebue Sound, were lost with the rest of the cargo of the vessel. As they could not live through the winter without supplies, I deemed it my duty to call at Cape Blossom to inform them of their loss and offer them a passage to St. Michael or elsewhere. Accordingly, the vessel was headed for Cape Blossom, which place was reached at 12.20 p. m. of the 21st. Lieutenant Bertholf, knowing where the mission was situated, was sent ashore to proffer aid to them. The barks *Haydn Brown* and *Northern Light* were at anchor off the cape. Captain Whitesides, of the *Northern Light*, informed me that he was waiting for passengers, and had nearly the full number engaged. That the Kotzebue Sound gold rush was a failure. He had been in the sound a couple of months and had not heard of any gold strikes. He estimated that at least three-quarters of the 2,000 people who were there, many of them with two years' provisions, would return. There were five barks at the southern end of Kotzebue Sound, taking in ballast preparatory to taking passengers from Cape Blossom. In that case there will be no lack of transportation for those who desire to return.

The schooner *Etna*, of San Francisco, having lost her anchor, was loaned a 500-pound kedge, the owners at San Francisco to replace it on board the *Bear* upon her arrival. At 11.45 p. m. Lieutenant Bertholf returned on board. The missionaries, having obtained supplies from returning miners, were going to remain at their station during the winter. Some articles needed by Lieutenant Jarvis to pay off natives at Cape Prince of Wales for services in the overland expedition were purchased from Captain Whitesides, of the bark *Northern Light*. Lieutenant Bertholf reported that he had met a number of men ashore who claimed to be stranded miners, and who wished a passage on the *Bear*. As the vessel was already overcrowded and there were other means of transportation at hand, their request could not be granted.

At 1.20 a. m., 22d, under way for Cape Prince of Wales, which was reached at 10 p. m. same day. Rev. W. T. Lopp came on board to settle accounts of the reindeer portion of the overland expedition. Mr. Lopp said that by the terms of the agreement with Lieutenant Jarvis the Treasury Department was responsible for the return of the reindeer he drove to Point Barrow. If Lieutenant Jarvis had not made the agreement he would not have given up the deer or gone with them. Without the reindeer and the assistance of Mr. Lopp the relief expedition would have gone no farther; so Lieutenant Jarvis was obliged to accept the terms.

As but 156 deer had been returned to him by the Interior Department agent, and there was no prospect of receiving any more from that source, he requested that the deer remaining at Point Barrow and Point Hope be returned to him and Charlie Antisarlook—220

head—being due Charlie. The captain of a whaling steamer that was to leave in a few days for Point Barrow had agreed to carry Mr. Lopp's herders to Point Barrow. I accordingly sent directions to Dr. Marsh to turn over the herd to Mr. Lopp's herders, who will start them south as soon as the weather is favorable. Mr. Lopp expects to be reimbursed for the expense of driving the deer back to his mission. The herders at Point Hope were sent orders similar to those sent to Dr. Marsh.

At 6.45 a. m., 23d, got under way for Port Clarence, which was reached at 1 p. m. Found steamers *Jeanie*, *Newport*, and *Thrasher* and bark *J. D. Peters* anchored in the bay. Captain Sherman, of the wrecked whaler *Orca*, came on board from the *Newport* for passage down; also Antone Roderick, from the *Newport*. At 9.25 got under way for St. Michael. On the way a call was made at Kings Island and at Point Rodney to land Charlie Antisarlook. St. Michael was reached at 3.45 a. m. on the 25th. The vessels in port were boarded and examined. Lieutenant Jarvis and Lieutenant Bertholf went ashore to arrange the bills owed by the overland expedition to the North American Trading and Transportation Company and the Alaska Commercial Company. Eight of the shipwrecked whalers, having obtained employment ashore, left the vessel. The business ashore being finished at 11.15 p. m. August 26, got under way for Unalaska, which was reached after a rather rough passage at 1.05 p. m. August 31. H. M. S. *Pheasant* was found in port, and on the 2d of September H. M. SS. *Amphion* and *Icarus* arrived. The usual courtesies were exchanged with each.

The boiler was blown down and preparations were made for coaling and watering ship. At 1.15 p. m. September 3, having finished coaling and watering, and all preparations completed, cast off from the wharf and steamed out of the harbor. At 4.55 p. m., being through Unalga Pass, set course for Cape Flattery. Rough weather was experienced the first four days out; after that, moderate and foggy. Waddah Island was sighted at 2.15 p. m. September 12, and a stop made to communicate with the Department by telegraph. Port Townsend was reached at 2 a. m. 13th. A dense fog and thick smoke compelled us to anchor until 6 a. m. Then, the fog partly lifting, got under way for Seattle, which was reached at 11 a. m. September 13, after an absence of nine months and sixteen days, most of the time spent in a dreary country and very inclement weather. The officers and crew bore the monotonous isolation with the greatest patience, complaints being almost unheard of.

The courage, fortitude, and perseverance shown by the members of the Overland Relief Expedition is deserving of the highest commendation. Starting over a route never before traveled even by dog sleds, with a herd of over 400 reindeer to drive and care for, they pushed their way through what at times seemed impassable obstacles, across frozen seas and over snow-clad mountains, with tireless energy,

until Point Barrow was reached and the object of the expedition successfully accomplished.

I respectfully recommend that the heroic services of First Lieut. D. H. Jarvis, Second Lieut. E. P. Bertholf, and Surg. S. J. Call should meet with such recognition as the Department sees fit to bestow.

As mentioned in my letter of June 23, 1898, Mr. W. T. Lopp and Charlie Antisarlook, who gave up their herds of reindeer, left their families, and accompanied the expedition to Point Barrow, are deserving of substantial reward for the sacrifices they made and the hardships they endured.

Respectfully, yours, F. TUTTLE,
Captain, Revenue-Cutter Service,
Commanding U. S. S. Bear.

The SECRETARY OF THE TREASURY,
Washington, D. C.

REPORT OF LIEUT. D. H. JARVIS, REVENUE-CUTTER SERVICE, TO SECRETARY OF THE TREASURY.

OVERLAND RELIEF EXPEDITION,
Fort St. Michael, Alaska, December 31, 1897.

SIR: I respectfully report the arrival of Surgeon Call and myself at this place last evening, after six days travel from Andreafski, on the Yukon River. The teams that have brought us this far I will drop here, and I have engaged Mr. Edwin Engelstadt, a trader at Unalaklik, to furnish such transportation as will be required as far as Golovin Bay. We are compelled to remain over to-day to make such preparations as are necessary for the journey to Cape Prince of Wales, and will leave for that place to-morrow morning.

Upon consideration I have decided to send two or three sled-loads of provisions from this place through to Kotzebue Sound, direct across the portage from Norton Bay to the Buckland River, to meet the party when we arrive at Cape Blossom with the herd of reindeer on the way to Point Barrow. I will do this because I feel certain there are not enough provisions at Cape Prince of Wales to fit out such a party as will be required to drive the herd of reindeer. In going from Cape Prince of Wales to Point Barrow the deer will necessarily have to be driven some little distance back from the coast, and the party will not be able to communicate with villages along the coast. They will have to depend upon their own resources to carry them through to the end of the trip, which possibly may take two or three months. But with such supplies as I will send to Kotzebue Sound to meet me at Cape Blossom the party will be independent of any intermediate

places and be able to select its own route to Point Barrow, or the one best adapted for the deer.

The reindeer herd from Port Clarence has not yet arrived at Unalaklik, but I think it possible I may meet them on the road. In that case Lieutenant-Colonel Randall, U. S. A., has placed at my disposal such number of teams as I may need to transport my party to Cape Prince of Wales; otherwise I will have to depend wholly upon dog teams, and I fear the journey will be rather long for them, as the ice in the sound is as yet much broken up and moving.

Second Lieutenant Bertholf and his party have not yet arrived, but I will leave such orders and arrangements to further his progress as it is possible for me to make.

The services of F. Koltchoff will be no longer required with the expedition, and I will leave orders directing him to report to Lieutenant-Colonel Randall, U. S. A., for duty at the reindeer station, as directed in Department orders.

I am much indebted to Lieutenant-Colonel Randall, U. S. A., commanding Fort St. Michael, and to the North American Transportation and Trading Company and the Alaska Commercial Company, for kindness and assistance in providing for the trip northward from here.

The health of the party is excellent, and there have been no accidents or mishaps of any kind.

Very respectfully, D. H. JARVIS,
First Lieutenant, Revenue-Cutter Service,
Commanding Overland Relief Expedition.

The SECRETARY OF THE TREASURY,
Washington, D. C.

OVERLAND RELIEF EXPEDITION,
Norton Sound, Alaska, January 3, 1898.

SIR: To-day on the ice I met Mr. G. F. Tilton, third mate of whaling steamer *Belvedere*, one of the vessels at Point Barrow, bound out by way of St. Michael and Katmai with mail and news of the position and condition of the vessels north for which the relief expedition was sent. On account of the situation, I opened such mail as I supposed would give me any information that might assist me in the purpose of the expedition. From all I could learn, the following is the condition there: The steamer *Orca* was wrecked trying to get out, September 22, 1897, a total loss, near Sea Horse Islands, and the same day, about four hours later, the steamer *Jessie H. Freeman* was wrecked also about the same place. The *Belvedere* was nearly out, but turned back to save the crews of the wrecked vessels and was caught by the ice. There is a probability of her coming out all right. The schooner *Rosario* is just around Point Barrow to the west, and there seems a

small chance for her safety. The steamer *Newport* and Norwegian steamer *Fearless* are about 55 miles east of Point Barrow; the steamer *Jeanie*, about 85 miles east of Point Barrow. The bark *Wanderer* was last seen about 60 miles west of Herschel Island, and had not been heard of at Point Barrow when Mr. Tilton left, October 17, 1897. It seems probable that all the vessels east of Point Barrow will be crushed by the ice.

The steamer *Mary D. Hume* is wintering at Herschel Island, and it is probable the crew of the *Wanderer* will make for her and be cared for. The crews of the other vessels are safe at Point Barrow, except a few who are camping on the shore near the ships to look out for them. The supply of provisions has been taken in charge and apportioned out to last until July next. It is not large, but will be sufficient to last, with the reindeer I will drive there; but there will be needed there as many provisions as can be taken when the ice opens. All the natives have been sent off into the interior to hunt, and, I think, can care for themselves. I hope to get the deer there by April, sooner if possible, but I think they will be there by that time, when the worst shortage will be. The steamer *Navarch*, caught in the ice last summer, drifted in to the east of Point Barrow in September and seven men were taken from her, two others refusing to leave. There are in all about 304 men on the ships, including those from the *Navarch* and those on the *Wanderer*, and I should say that transportation will be needed for about 250 when the ice opens. The part of the road the expedition is traveling over now is probably the worst to be encountered on the trip, but we are taking advantage of every opportunity and going ahead all the time, even if progress is not as rapid as we would like. I see no reason to change the general plans of the Department, and will do my utmost to carry them out to a successful end.

Mr. Tilton has been over the road from the north, and agrees with me thoroughly in the utter impossibility of carrying anything there by sledges, and that the only possible way is to drive the reindeer. Dogs are scarce and require food. Men have not been sent to Point Hope, where there are provisions, because of the lack of means of transportation.

We are in good health and have had no mishaps so far, and no time will be lost that can be taken advantage of.

Very respectfully,

D. H. JARVIS,
First Lieutenant, Revenue-Cutter Service,
Commanding Overland Relief Expedition.

The SECRETARY OF THE TREASURY,
Washington, D. C.

REPORT OF LIEUT. D. H. JARVIS, REVENUE-CUTTER SERVICE, TO CAPT. F. TUTTLE, REVENUE-CUTTER SERVICE.

UNITED STATES REVENUE-CUTTER SERVICE,
OVERLAND RELIEF EXPEDITION,
Cape Prince of Wales, Alaska, January 25, 1898.

SIR: I respectfully report my arrival at this place on the 24th instant. Upon delivering to Mr. Lopp his mail and explaining to him the necessity and object of the expedition, and that the Government was particularly desirous that he should join it, he has consented to go and take his reindeer herd and herders.

The herd is the property of the American Missionary Association, and the herders, together with several individual natives at this place, and is given with the understanding contained in Department order of November, 1897, that it will be returned next summer, together with the average number of fawns that will be born to it the coming spring.

There are now in the herd 301 deer; 9 of these I had to buy from a native, Kummuk, at $15 per head, San Francisco prices, giving him an order on you for such articles as he desired; the remaining 292 should have 140 living fawns in April, making 432 deer to be returned to the American Missionary Association and the people here through Mr Lopp as their representative. This is the number that should be returned the coming summer, but if for any reason this can not be done, the natural increase of the herd that would follow the next spring, had the herd not been disturbed, will have to be taken into consideration upon fulfilling the contract on the part of the Government. I have also agreed that it shall be the option of the American Missionary Association or the people here owning deer, to sell to the Government a limited number of those given to the use of the expedition at the ruling price in any neighboring market in this section.

I have engaged Mr. Lopp and the herders at the following salaries for their services: Mr. Lopp, $150 per month; the herders, $30 per month, and that the money can be invested in San Francisco and the articles will be brought to them by the *Bear*. The herders engaged are Artisarlook, Point Rodney; and Sakwenna, Ootema, Netaxite, Kiveatzruk, Stuk, and Keok, of Cape Prince of Wales, Alaska; and Tautook, of Port Clarence, Alaska. The latter has two deer that he has brought, and will either sell or exchange for females if the deer are returned the coming summer.

Respectfully, yours,

D. H. JARVIS,
First Lieutenant, Revenue-Cutter Service,
Commanding Overland Relief Expedition.

Capt. F. TUTTLE,
Commanding Revenue Cutter Bear.

REPORT OF LIEUT. D. H. JARVIS, REVENUE-CUTTER SERVICE, TO CAPT. F. TUTTLE, REVENUE-CUTTER SERVICE.

OVERLAND RELIEF EXPEDITION,
Point Hope, Alaska, March 5, 1898.

SIR: I respectfully report the arrival of Surg. S. J. Call and myself at this place February 20. Upon our arrival I learned that the people on the vessels at Point Barrow were all right, and would be until May, and hearing from Mr. Lopp that he had arrived at Cape Krusenstern on the morning of February 17, I proceeded to meet them at Kevuleek River. After making all arrangements for their progress and supplying them with necessary clothing, they were started across from Kevalina on the second instant, and expect to come out on the coast about the mouth of the Pitmagea River.

I have made all preparations to leave here to-day with Surgeon Call for Point Barrow. Second Lieut. E. P. Bertholf will remain here and care for any of the men who may be sent down from Point Barrow in the spring.

The health of the expedition has been good, and no accidents or mishaps have occurred.

All the expenses of the expedition in this region will be assumed by Mr. Nelson, of H. Liebes & Co.'s whaling station.

Respectfully, yours,

D. H. JARVIS,
First Lieutenant Revenue-Cutter Service,
Commanding Overland Relief Expedition.

Capt. F. TUTTLE,
Commanding Revenue Cutter Bear.

REPORT OF LIEUT. D. H. JARVIS, REVENUE-CUTTER SERVICE, TO CAPT. F. TUTTLE, REVENUE-CUTTER SERVICE.

UNITED STATES REVENUE-CUTTER SERVICE,
STEAMER BEAR,
Port of Point Barrow, Alaska, August 16, 1898.

SIR: I respectfully report that upon the arrival of the overland relief expedition at this place, March 29, 1898, there were quartered on shore 100 officers and men of the wrecked vessels *Orca*, *Jessie H. Freeman*, and *Navarch*, and of the steamer *Belvedere*. Upon consultation, the situation was found to be such that I deemed it necessary to take charge and establish myself at the Cape Smyth Whaling Company's station, where nearly all the provisions were held. The available stock of provisions had already been rationed to last until the latter part of August, and, though there was no distress, the allowance was necessarily small. I immediately communicated with the masters of the schooner *Rosario* and steamers *Newport*, *Fearless*, and *Jeanie*, and received assurances from them that they thought they would be able to carry their crews through until August, but on greatly reduced rations. The vessels were distributed over a distance of 150 miles

and, as far as the difficulties and possibilities of hauling would permit, the provisions had been equitably divided between all the vessels and the people on shore. I was constantly in communication with the vessels and visited them all to ascertain their position and condition, and, from the point of control over the whole situation, worked with the masters for such good order and distribution of food as would keep all on the same allowance as far as possible and secure a final good outcome.

On the day of arrival I was presented with a petition from the members of the crews quartered here, asking that their condition be looked into. They—76 men—were at that time living in the old building of the Pacific Steam Whaling Company. Their quarters were immediately inspected and found to be in a bad condition. The building, 22 by 55 feet, was old and leaky. It had been abandoned and was fitted up in October, 1897, to accommodate these men. The only heat was from the cooking range in the center, and the steam from this caused drippings that kept the floor and sides constantly wet and full of ice. In most of the berths the bedclothes were never dry. The accumulation of dirt and filth was such that only the cold weather prevented serious sickness of all hands. The clothes and persons of the men were in most cases filthy, due to seal oil lamps that were used in the endeavor to keep warm, and a change of quarters and habits was necessary immediately. Scurvy had made its appearance. There were two well-developed cases and indications of others. Twenty-five of the men were placed in the refuge station, where the officers were already quartered, making 40 in all there; 23 in the schoolroom of the Presbyterian Mission, now occupied by Dr. and Mrs. H. R. Marsh, who kindly gave its use, and 28 in a building of the Cape Smyth Whaling Company, formerly used as a storehouse. To fit up and to heat these extra quarters the old building was torn down and used for firewood, there being scarcely enough coal on hand to do the cooking. Clothing was the next consideration, and a collection was made of all that could be found, the natives contributing the greater part, and it was issued to such men as most needed it. The allowance of soap was increased and the men were required to keep their clothing and persons clean. A daily inspection of quarters, clothing, and men was instituted, and a radical and gratifying change was soon apparent in the health and appearance of all. The scurvy patients were soon well, and from that time until your arrival there was no serious illness. June 8 Philip Mann, age 46 years, native of New York City, seaman of the steamer *Jessie H. Freeman*, while walking along the beach, dropped dead from heart disease. He had been complaining all winter and had a short time before been relieved from all heavy work. The body was given an appropriate burial and the grave marked by a headstone with name and identity.

The allowance of meat at all points was short and inadequate and

wholly dependent upon the success of the hunters and the possibilities of hauling from the distant stations. Hunters were kept out for deer as late as June 1, and for ducks and eggs when they arrived, the last of May. This stock was too short and too precarious and was increased by killing 180 of the reindeer brought by the expedition. The daily allowance was increased from one-half pound to 1¼ pounds per man, which made a comfortable and sufficient ration. One pound of flour per day was issued, and the few small stores on hand were distributed to give some little variety to the food and prevent scurvy.

All danger of serious shortage was now removed, the tension under which everyone had been during the winter was relieved, and it only remained to keep everything well in hand and the men and natives under good control. Such authority as was necessary was used, though, considering the situation with nearly 300 men and 500 natives, the general good order was remarkable; after our arrival there was no occasion for the exercise of severe measures.

On April 22 a sled arrived from Herschel Island bringing news of the arrival back there of the bark *Wanderer* on September 8. The steamer *Mary D. Hume* was wintering there with two years' supplies on board, so all anxiety on the *Wanderer's* account was relieved.

On July 2, during a heavy southwest gale, the schooner *Rosario* was crushed by the ice. Being near the shore, her crew got out safely and saved all their provisions. Nine of her crew were subsequently brought to Cape Smyth, the master and officers remaining camped on the shore by the wreck.

The reindeer herd was kept at a distance of from 10 to 15 miles from Cape Smyth ready for any calls upon it. Artisarlook and Utenna, herders from Point Rodney and Cape Prince of Wales, were kept to care for the deer, and four native boys were engaged to assist them. The feed was good, and but one death occurred from natural causes, though there was a large proportion of deaths among the fawns born due to the hard travel of the mothers so near the calving time.

The situation last fall upon the vessels first being caught was a most precarious one and looked gloomy and serious. Its final good outcome seems providential. Everyone turned to and worked to his utmost to obtain what was possible in the country, and the natives, recognizing the seriousness of the situation, gave invaluable aid and denied themselves such food as was required for the white people. On shore Mr. C. D. Brower, manager of the Cape Smyth Whaling Company, gave up everything in his station except his personal supplies, and these he shared with as many as he could accommodate in his house. He controlled the situation ashore and furnished most of the native hunters, teams, clothing, and other necessaries for the care of the men. His arrangements were excellent, and upon our arrival the whole resources of his station were placed at our disposal and he gave his knowledge and help in all matters. Mr. E. A. McIlhenny, in

charge of the Pacific Steam Whaling Company's buildings, and Dr. H. R. Marsh also gave material aid.

The arrival of the overland expedition, when things were again taking a serious turn, was most timely. Your orders and the orders of the Department were fully carried out and nothing was left undone. The difficulties and dangers of travel in an arctic winter were met and overcome without accident or mishap. There was never any let down in the work from beginning to end, and the highest commendation is due Second Lieut. E. P. Bertholf, Revenue-Cutter Service, Surg. S. J. Call, and Mr. W. T. Lopp in making this successful outcome of a trying and difficult expedition, which contributed so much to the relief of the serious situation found. The native herders who gave up their deer so cheerfully and then drove them to Point Barrow I hope will not only be reimbursed, but also rewarded for their valuable aid.

I beg to be allowed to submit later data and particulars necessarily omitted here.

Respectfully, yours,

D. H. JARVIS,
First Lieutenant, Revenue-Cutter Service,
Commanding Overland Relief Expedition.

Capt. F. TUTTLE,
Commanding Revenue-Cutter Bear.

Reindeer account, Point Barrow relief expedition.

Received from Artisarlook		133	
Bought at Port Rodney		5	
Received from Mr. W. T. Lopp et al		292	
Bought at Cape Prince of Wales		9	
Received from Tautook		2	
Received from Tautook Government herd		5	
Received from Tautook Golovin Bay herd		2	
			448
Lost and killed en route		66	
Killed for food at Point Barrow		180	
Died at Point Barrow		1	
			247
			201
Fawns born at Point Barrow		254	
Fawns died at Point Barrow		64	
			190
Remaining at Point Barrow			391
Recovered at Point Barrow	34		
Killed for food	5		
			29
Fawns born at Point Hope	25		
Fawns died at Point Hope	6		
			19
Remaining at Point Hope			48
Total deer remaining at Point Barrow and Point Hope			439

REPORT OF LIEUT. E. P. BERTHOLF, R. C. S., TO CAPT. F. TUTTLE, R. C. S.

UNITED STATES REVENUE-CUTTER SERVICE,
Point Hope, Alaska, July 15, 1898.

SIR: In accordance with the instructions of Lieutenant Jarvis, Revenue-Cutter Service, commanding the overland relief expedition, under date of March 5, 1898, a copy of which is hereby inclosed, I respectfully submit the following report.

The plans referred to for the return of Mr. W. T. Lopp related principally to the transportation of provisions up the coast to the mouth of the Pitmegea River. This was done as directed, and Mr. Lopp left here on the 23d of April, leaving behind one deer herder to care for the deer that had strayed from the main herd while en route to Point Barrow.

When Mr. Lopp and myself left Aneyok (near Cape Krusenstern) with the deer herd, on the 21st of February, it had been decided to send back to their homes four of the native herders then with the herd, and these were consequently left behind at that place, provision having been made for their return travel.

Having accompanied Mr. Lopp and the herd along the coast as far as the place where he was to strike across the lagoons for the Kevuleek River, I parted company with him on the 27th of February and proceeded to this place, in accordance with previous orders from Lieutenant Jarvis.

Here I received word, on March 21, that some of the deer were at Aneyok, in charge of two of the herders. I sent word to him to drive the deer up here, and on April 21 they reached this place, in charge of Ituk and Keok. It appears that somewhere between Aneyok and the Kevuleek River these deer, 34 in number, had strayed from the main herd, and a native who had acted as a guide for Mr. Lopp had discovered them on his return to Aneyok. As the herders had not yet started on their return trip, they went after the deer and drove them back to the village, after which they all returned to their homes, except Ituk and Keok, who then drove the herd here. Three deer had been killed for food on the way, so that when they arrived here there were 31 in the herd, 26 of them being females. I gave the herders my tent and camp gear, employed three young natives to help them, and sent them with the deer several miles back in the hills, where the moss was good and they would not be troubled by the dogs from the villages. There the camp was established and the deer cared for. From time to time I have supplied these four natives with such clothing and provisions as were deemed necessary, and also tobacco, cartridges, shot, lead, and powder. All these articles I obtained from Mr. Rustan Nelson, manager of Liebes & Co.'s whaling station at Point Hope, and charged the same to the account of the overland relief expedition. Up to the present time 2 of the old deer have been killed for food, and

25 fawns have been born, 6 of which have died, thus leaving 29 old deer and 19 fawns in the herd, and apparently well cared for and attended to.

With regard to the illicit distilling of spirituous liquor by the natives, I have made several trips to the different villages and visited and searched all the native houses from Cape Thompson to Point Hope, discovering and destroying 6 stills and about 10 gallons of mash nearly fermented. On two of these trips I have been assisted by Capt. Peter Bayne and Mr. Henry Koenig (commonly known as Cooper), who have whaling stations on the Point, and I have been most materially assisted by Mr. Nelson, who has accompanied me on several of the trips. When I visited the native village at Point Hope, Mr. Nelson and myself searched several of the houses there, but finding no trace of what we were looking for, I concluded to talk to the natives and try persuasions, Mr. Nelson acting as interpreter. After telling them about the bad effects of whisky I recited instances where whole villages had been depopulated by indulgence in the liquor, thus being rendered incapable of procuring the necessary food supplies for the winter. The natives appeared very much impressed by what had been said, and they soon showed us many places where the stills had been hidden, buried in the snow, and in a short time we had destroyed 9 stills which had been concealed in all sorts of snow banks, where it would have been almost impossible for us to have discovered them. The following day a native woman came all the way down here from Point Hope and gave me 5 still pipes, the tubs of which she said had been broken up. This makes in all 20 stills that have been destroyed.

There remain, I believe, many other stills in this vicinity, which I have been unable to discover; but even if they were all destroyed, the natives could easily make others, and I am convinced that this illicit distilling can not be stopped unless the whites are prevented from trading molasses to the natives or the molasses is diluted by some article that will prevent fermentation. In this connection I will state that I have been asked by several natives, who seemed to be very intelligent, the very pertinent question why the white men are allowed to trade molasses, if it is wrong for the natives to make whisky, and why the ships are allowed to trade whisky to the natives. I can not speak too highly of the aid given me by Mr. Nelson in this matter, whereas it is an open secret that there have been times when white men on Point Hope have encouraged this illicit distilling by buying and drinking the concoction after it had been brewed by the natives.

The circumstances of the murder of the native Washok by the other natives last fall are as follows: About 11 o'clock in the forenoon on the 17th of November, 1897, Mr. Rustan Nelson was sitting in his house reading, and Messrs. Charles Sandbourne and George F. Tilden were working in one of the other rooms of the house, when they all

heard two rifle shots in quick succession, followed soon after by four others. Mr. Nelson put his revolver in his pocket and ran outside, and there saw close by the house the two natives Avulik and Shukurana, each with a smoking rifle, standing over the body of Washok, who was dead, with six bullet holes in his body. Washok's wife was close by, and several other natives were running to the scene of the firing. Sandbourne and Tilden ran out soon after Nelson, and after ascertaining that Washok was beyond help they all returned to the house. Soon the body was buried after the usual native fashion. It appears that Washok and his wife were returning to the village with a load of wood, when the two above-named natives concealed themselves and committed the murder.

There was probably only one actual witness to the affair except the murderers, and that was Washok's wife, all the other natives in the village being out of sight. Subsequent inquiry developed the fact that the other natives in the village knew the shooting was to take place. The natives give as a reason for the killing that Washok was a bad character, having threatened the life of an old man in the village, and having shot at two men the night before he was killed. After the killing the two murderers left this place, Shukurana going to Tarpkwa, on the north side of the Cape Prince of Wales peninsula, and Avulik going to another village near Cape Thompson. Avulik came back here this spring to work for Mr. Nelson during the whaling season, and it had been my intention to take him on board the *Bear* with me when I reported and turn him over to you. I had planned to do this without exciting the natives' suspicion, for it seemed quite unnecessary and impracticable for me to seize him and hold him here a prisoner, as there is no place to shut him up securely. It has been the custom of the natives to remain at the whaling stations until the ships arrive in the spring, so as to get their pay, and I could easily have taken him on board the *Bear* without exciting his suspicion. But this spring no whales were caught and no pay was coming to the natives, and they have been gradually leaving for the eastward to catch their fish for the winter. Avulik seemed in no hurry to leave, and said he was going to wait for the ships; but when I returned on the 10th of July, after a trip to Point Hope, I found that Avulik and his brother had departed in their canoe for the Kevuleek River, where they are going to live this winter. He probably went to the eastward to fish, as seal is very scarce here now, and I am sure he had no idea of my intentions toward him, as I had spoken to no one about him but to Mr. Nelson, and neither he nor I have ever talked of the matter in the presence of anyone else.

Avulik can be found at or near the mouth of the Kevuleek River, and Shukurana is somewhere on the south side of Kotzebue Sound. The witnesses to the affair can be found here, except Mr. Tilden, who is probably in San Francisco.

On or about the 27th of May another native murder occurred. A native named Animeah shot and killed his former wife because she refused to return and live with him and his other wife. I would have endeavored to bring him on board the *Bear*, but he died July 10 from some affection of the chest.

Very respectfully,

E. P. BERTHOLF,
Second Lieutenant, Revenue-Cutter Service

Capt. FRANCIS TUTTLE,
Commanding Revenue Steamer Bear.

DR. SHELDON JACKSON DIRECTED TO REPORT TO THE SECRETARY OF WAR FOR INSTRUCTIONS.

DEPARTMENT OF THE INTERIOR,
Washington, December 23, 1897.

SIR: In compliance with the request of the Secretary of War, dated to-day, you are hereby directed to report to him for temporary duty in connection with the duties enjoined by the act of Congress approved on the 18th instant, entitled "An act authorizing the Secretary of War, in his discretion, to purchase subsistence stores, supplies, and materials for the relief of people who are in the Yukon River country, to provide means for their transportation and distribution, and making an appropriation therefor."

Very respectfully, C. N. BLISS, *Secretary.*

Dr. SHELDON JACKSON,
General Agent of Education in Alaska,
Office of Education.

DR. SHELDON JACKSON SENT TO LAPLAND FOR REINDEER.

WAR DEPARTMENT,
Washington, December 23, 1897.

DEAR SIR: You are hereby instructed to proceed at once, in company with Lieut. D. B. Devore, United States Army, to Norway and Sweden, to purchase 500 reindeer broken to harness, together with full outfit for hauling or carrying supplies to the Yukon Valley, and also to provide such means as may be necessary for shipment to this country as soon as purchased, remembering that it is essential that they should be landed here at the furthest by the 15th of February. These instructions are also to cover the employment and bringing into this country of reindeer drivers.

Lieutenant Devore, of the Army, will accompany you as disbursing agent and will provide the necessary funds for all expenses and purchases in connection with the procurement and shipment of the rein-

deer. I wish you and Lieutenant Devore to confer on all matters pertaining to the purchase of these reindeer and the shipping of them.

These instructions are for Lieutenant Devore, as well as yourself.

Very respectfully,

R. A. ALGER,
Secretary of War.

Dr. SHELDON JACKSON,
Special Agent, Department of the Interior,
Washington, D. C.

DR. SHELDON JACKSON COMMENDED TO THE DIPLOMATIC AND CONSULAR OFFICERS OF THE UNITED STATES IN ENGLAND, DENMARK, SWEDEN AND NORWAY.

DEPARTMENT OF STATE,
Washington, December 21, 1897.

To the Diplomatic and Consular Officers of the United States.

GENTLEMEN: At the instance of the Secretary of War, it gives me pleasure to herewith introduce Dr. Sheldon Jackson, who is about visiting England, Denmark, and Sweden and Norway for the purpose of securing reindeer in accordance with the instructions of the Secretary of War, in pursuance of the authorization of Congress appropriating the sum of $200,000 for the purchase of subsistence stores, supplies, and materials for the relief of people who are in the Yukon River country or other mining regions of Alaska, and to purchase transportation and to provide means for the distribution of such stores and supplies.

Dr. Jackson is the general agent of education under the Department of the Interior for Alaska, and is in every way familiar with that country. The Department hopes that you will extend to Dr. Jackson every possible assistance he may ask in the execution of his instructions.

Respectfully, yours,

JOHN SHERMAN, *Secretary.*

NORWEGIAN OFFICIALS REQUESTED TO AID DR. JACKSON.

[Aabent brev.]

FRA DEN KONGELIGE NORSKE REGJERINGS
DEPARTEMENT FOR DET INDRE.

Gjennem de amerikanske Myndigheder har Departementet modtage Meddelelse om, at Dr. Sheldon Jackson, der er ansat under Indredepartementet i Alaska, har faaet i Opdrag at sørge for Transport af Levnetsmidler m.V. til de Guldgravere, der overvintrer i Klondike, og at han i denne Anledning bl.A. vil besøge Norge for at indkjøbe Rensdyr til saadan Transport.

I denne Anledning skal Departementet anmode de offentlige Funktionaerer, til hvem han i saadant Oiemed maatte henvende sig, om paa beste Maada at bistaa ham med Raad og Veiledning til at udføre sit Hverve.

Kristiania den 6 Januar, 1898.

OLAJ OLSEN.
C. B. KIRLLAND.

[Translation.]

[Open letter.]

THE ROYAL DEPARTMENT OF THE INTERIOR OF NORWAY.

Our department has received information through American authorities that Dr. Sheldon Jackson, who occupies an official position in Alaska under the Interior Department, United States of America, has been commissioned to provide for the transportation of provisions for the gold diggers, who winter at the Klondike mines, and that he for this purpose, among other things, will visit Norway to buy reindeer for transporting the provisions.

This department will instruct the official functionaries, to whom he may address himself with this end in view, to assist him with council and advice in order that he may be better able to accomplish his undertaking.

Christiania, January 6, 1898.

OLAJ OLSEN.
C. B. KIRLLAND.

List of reindeer drivers and others in the Lapland-Yukon relief expedition of January and February, 1898.

FROM KAUTOKEINO.

Names.	Age.		Sex.	Names.	Age.		Sex.
	Yrs.	*Mos.*			*Yrs.*	*Mos.*	
Johan Olsen Pulk, 3 years *a*	42		Male.	Isak Salamonsen Nakkila	28		Male.
Karen (his wife)	50		Female.	Nils Persen Bals	41		Do.
Inger Karen (child)	15	6	Do.	Elen Marie (his wife)	23		Female.
Berret Inga (child)	10		Do.	Ingra Bals (child)	18		Do.
Aslak Johnsen Bals, 4 years *a*	46		Male.	Per (child)	15		Male.
Susanna (his wife)	40		Female.	Merit (child)	11		Female.
Susanna (child)	7		Do.	Per Mathisen Spein	27		Male.
Mikkel Aslak (child)	5		Male.	Ole Klemetsen Hatta	25		Do.
Johan Petter Persen Rista *b*	26	6	Do.	Aslak Aslaksen Gaup	27		Do.
Berret Anna (his wife)	23	4	Female.	Kjersten (his wife) *a*	23		Female.
Nils Persen Sara	40		Male.	Ole Johannesen Pulk	20		Male.
Marie (his wife)	40	8	Female.	Isak Mikkelsen Tornensis *a*	40		Do.
Ellen (child)	15		Do.	Per Johnannesen Hatta *a*	26		Do.
Mikkel (child)	12		Male.	Nils Klemetsen *a*	28		Do.
Morten (child)	6		Do.	Ole Olsen Bar *a*	36		Do.
Klemet (child)	4		Do.	Inger (his wife)	35		Female.
Mathias (child)	2		Do.	Inger Anna (child)	3		Do.
Johan Isaksen Tornensis	40		Do.	Klemet (child)	1	3	Male.
Berret (his wife) *a*	39		Female.	Isak Andersen Bango *a*	30		Do.
Jacob Larsen Hatta	29	6	Male.	Per Nilsen Siri *a*	24		Do.
Berret (his wife)	50		Female.	Ida Johansdatter Hatta	23		Female.
Mikkel (child)	16		Male.	Beret Nilsdatter Eira	21		Do.
Berret Anne (child)	6		Female.	Lars Larsen Hatta *a*	26		Male.
Ida Johansdatter	8		Do.	Klemet Nilsen	44		Do.
Isak Johanssesen Hatta *a*	26		Male.	Anders Persen Utzi	36		Do.

a Recently married. *b* Mail carrier.

List of reindeer drivers and others in the Lapland-Yukon relief expedition of January and February, 1898—Continued.

FROM KARASJOK.

Names.	Age.	Sex.	Names.	Age.	Sex.
Per Andersen	42	Male.	Berret Nilsdatter Eira	21	Female.
Sofie (his wife)	46	Female.	Johan Petter Johannesen Nango	30	Male.
Sofie (child)	11	Do.	Kirsten (his wife)	36	Female.
Anders Klemetsen Biti *a*	36	Male.	Per (child)	1 6	Male.
Marit (his wife)	22	Female.	Samuel Johannesen Balto *a*	36	Do.
Anders Johnsen	24	Male.	Lars Larsen Anthi *a*	26	Do.
Klemet Bersen Boini	23	Do.	Johannes Aslaksen Raur Rauna	33	Do.
Per Larsen Anthi	39	Do.	Ole Krogh	40	Do.
John Andersen	36	Do.	Iver Persen Vestad	25	Do.
Amund Hansen	22	Do.	Per Josefsen Porsanger	41	Do.
Ole Olsen	20	Do.	Pathias Klemetsen Nillokka	20	Do.
Anders Aslaksen Bar	25	Do.	Hans Andersen Siri	22	Do.
Anders Johannesen Balto	33	Do.	Ole Johansen Stenfjeld Roros (fr. Röros)	24	Do.
Marit (his wife)	30	Female.			
Marie (child)	7	Do.			
Johan Eriksen Eira *a*	30	Male.			
Marit (his wife)	34	Female.			

FROM BOSEKOP.

Ole M. Rapp	21	Male.	Ole G. Berg	40	Male.
Lauritz Stefansen	21	Do.	Peder Berg	20	Do.
Johan Hilmar Hansen	23	Do.	Lauritz Larsen	30	Do.
Johan Johannesen Tverelo	21	Do.	Rolf Wiig	18	Do.

FROM KAAFJORD.

Olai Paulsen (prize rifleman)	31	Male.	Hilda (his wife)	25	Female.
Birgithe (his wife)	30	Female.	Harald (child)	8	Male.
Kristian (child)	7	Male.	Ragnvald (child)	4	Do.
Margit (child)	5	Female.	Oswald (child)	3	Do.
Alfhild (child)	4	Do.	Alice (child)	6	Female.
Magnus Kjeldberg	22	Male.	Karl Johan Sacariasen	23	Male.
Emil Kjeldberg	26	Do.	Jafeth Lindeberg	24	Do.
Thoralf Kjeldberg	22	Do.	Wm. A. Kjellmann	36 7	Do.
Otto M. Leinan	33	Do.	Gunharda Thomasen	18	Female.

FINLANDERS.

Alfred Salamonsen Nilima	21 4	Male.	Peder Johannesen (fr. Saxelo)	24	Male.
Wilhelm Basi (fr. Langfjord)	28	Do.	Samiul Josefsen (fr. Saxelo)	25	Do.
Jeremias Abrahamsen (fr. Langfjord)	25	Do.	Otto Greiner (fr. Saxelo)	25	Do.
Karl Ove Suhr (fr. Elvebakken)	28	Do.	Hans Samuelsen (fr. Saxelo)	26	Do.
Alfred Hermansen (fr. Alten)	21	Do.	Johan Petter Stalogargo *b*	33	Do.

a Recently married.

b Carried mail on skees to North Cape eight years.

Lapps from Kautokeino	47	
Karasjok	30	
Roros	1	
	—	78
Norwegians from Bosekop	8	
Kaafjord	16	
Finns	10	
from Hammerfest	1	
	—	35
Total		113

CONTRACT WITH THE LAPLANDERS.

[Translation.]

All the undersigned admit and make known by these presents that they have hired themselves reindeer herders, drivers, tamers, and to teach the Eskimo in Alaska in reindeer raising in all its details, and furthermore, to carry out such work as our superiors put over us by United States Government may require; also to look out for the reindeer during transportation to Alaska. Furthermore, we bind ourselves to behave ourselves orderly and decently and to show discipline, and also to depart from our houses the 29th of January next, from which date this contract goes into effect.

For the service and work above referred to, the undersigned, Dr. Sheldon Jackson, acting for the War Department, binds himself on behalf of United States Government to cause to be paid to every one of the undersigned the monthly salary attached to our names and all necessary and required food and clothes (tobacco not herein counted) and free transportation to Alaska. Should any of the undersigned, after two years' service, desire his salary to be paid with reindeer instead of money, such payment shall take place. The price for reindeer shall then be counted according to the price at that certain time prevailing or which is paid in the common market. Even so shall every one of the hired men, if he is deemed qualified by appointed Government officials, have the right to a loan of 100 reindeer for three or five years, as will be later determined, without lease or rent, in such way that only the original number shall be returned to the Government, and all offspring or surplus belongs to the leaser, all other things, as with reference to residence, etc., in accordance with and under such conditions as may be stipulated in the contracts of lease. Such loan of reindeer can, however, not take place before or after two years' period.

Also the hired men shall have free nursing and medicine in case of illness and also the salary shall be paid during the illness, and free schooling for their children, and they shall be free from taxes as long as this contract is binding.

Time of notice of end of service is put mutually to six months, but no notice of end of service can take place from the side of the hired men before after two years' period.

This contract is signed by all and every one of the undersigned, but duplicates are to be made and to be signed for and by each one separately. Also each one of the hired men shall be free from military service and have free lighting and heating, washing and mending of clothes, and all other things that are connected with and necessary for existence. The hired men shall also be free from work on Sundays except with reference to work absolutely necessary. The hides and furs of all the wild deer which are caught or shot shall belong to the man who has got hold of the deer and can be sold by him to whomever

he likes and the money shall be his private property. To those of the undersigned who are married and have their wives with them, the provisions shall be given out once a month and be prepared and cooked by the wife. The others who are not married shall, according to their own wish, have their provisions dealt out every month and have their food prepared by a cook appointed for such service.

Should any of the undersigned after the end of the time of service desire to return home, he shall then be at liberty to select between paying his own journey home or that the Government pay such journey provided that the respective man for such expense serve six months without salary.

The 24th of January, 1898.

Witness:

A. PAULSEN.

WM. A. KJELLMANN.

Nils Sara, $22.33; Isak Tornensis, $22.33; Jacob Hatta, $22.33; Lars Larsen Hatta, $22.33; Otto Greiner, $22.33; A. Klemetsen Biti, $22.33; John Eriksen Eira, $22.33; Per Mathisen Spein, $22.33; Aslak Johnsen Bals, $22.33; Per Larsen Anti, $22.33; Hans Sanuelson, $22.33; Per Josefsen Porsanger, $22.33; Nils Klemetsen, $22.33; Ole Olesen Bahr, $22.33; Carl Sakariasen, $22.33; Ole Krogh, $22.33; Jeremias Abrahamsen, $22.33; Rolf Wiig, $22.33; Th. Kjeldsberg, $33.50; Alfred Hermansen, $22.33; Ole Rapp, $22.33; Wilhelm Basi, $22.33; Karl O. Suhr, $28.95; Ole G. Berg, $22.33; Magnus Kjeldsberg, $33.50; Ole Johnsen Stensfjeld, $22.33; Jafet Lindeberg, $31.26; Heilmar Hansen, $22.33; John M. Johansen, $22.33; Lauritz E. Larsen, $22.33; Isak Andersen Bangs, $22.33; Beret Eira, $4.46; Ida J. Hatta, $4.46; Sofia Andersen, $4.46; Marit Persdatter Biti, $4.46; Per Andersen, $22.33; Samuel J. Balto, $26.80; Otto M. Leinan, $22.33; Anders Balto, $22.33; Johan Peter Persen Rista, $22.33; Aslak Aslaksen Gaup, $22.33; Amund Hansen, $22.33; Ole Olesen, $22.33; Johan Peter Johanesen Nango, $22.33; Peder Johanesen, $22.33; Samuel Josefsen, $22.33; Anders Johnsen, $22.33; Iver Persen Vest, $22.33; Johannes Aslaksen Rauna, $22.33; Johan Olsen Pulk, $22.33; Lars Larsen Anti, $22.33; Ole Johannessen Pulk, $22.33; Lauritz Stefansen, $22.33; Peder Berg, $22.33; O. Paulsen, $40.20; John Andersen, $22.33; Mathis Klemetsen, $22.33; Ole Klemetsen Hatta, $22.33; Alfred Nilima, $22.33; Nils Persen Bals, $26.80; Anders Persen Utzi, $22.33; Klemet Nilsen, $22.33; J. P. Johanesen Stalogargo, $22.33; Per Johannessen Hatta, $22.33; Per Nilsen Siri, $22.33; Klemet Persen Boini, $22.33; Anders Aslaksen Bar, $22.33; Hans Andersen Siri, $22.33; Emil Kjeldberg, $33.50; Johan I. Tornensis, $26.80; Isak J. Hatta, $22.33.

DR. SHELDON JACKSON DETAILED TO TAKE CHARGE OF THE LAPPS AND REINDEER EN ROUTE TO ALASKA.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, D. C., March 10, 1898.

MY DEAR SIR: By the direction of the honorable the Secretary of the Interior, you are hereby detailed for special duty in the district of Alaska. The details of his instructions are as follows:

Dr. Jackson will at once proceed to Dyea, in Alaska, and confer with the officer of the War Department in charge of the Alaskan relief expedition for the care of the reindeer across the country to Circle City and their care near that place until they shall be turned over to him in May, of 1898; thereafter, he will proceed to sell them as seems best for the interests of this Department, and with the proceeds arrange to purchase does to replace those borrowed from the herds in Alaska belonging to private parties and used during the past winter for the relief of destitute miners and whalers in that section.

His traveling expenses, including subsistence, will be paid by the War Department out of the relief fund.

Very truly, yours,

W. T. HARRIS, *Commissioner.*

Dr. SHELDON JACKSON,
United States General Agent of Education in Alaska.

TELEGRAMS CONNECTED WITH THE COMMISSION TO LAPLAND.

NEW YORK, *November 22, 1897.*

SHELDON JACKSON, *Bureau of Education:*

Our company cables through rate reindeer, Tromsoe New York, £4 15s. sterling per head, including attendants, if 500 carried at once, but excluding charges caused by detainment Christiansand; shippers to furnish food and stables. Our Mr. Johnson will be in Washington to-morrow morning. When and where can he meet you?

A. E. JOHNSON & CO.

SHELDON JACKSON, *Bureau of Education:*

Our company cables in continuance with our yesterday cable, "Add, freight prepaid. Ship not responsible for sickness or death."

A. E. JOHNSON & CO.

[W. H. Root, importer, exporter, and dealer in living wild animals. Cable address, "Deer."]

LARAMIE, WYO., *November 19, 1897.*

SHELDON JACKSON, *Washington, D. C.*

DEAR SIR: Referring to yours of November 16, we will deliver 1,000 reindeer at Dyea or any other regular steamer landing on the Pacific coast for $150,000; fifty Lapps, as stated, at $2,500. Can deliver at any time in about ninety days after contract is made.

Yours, truly, W. H. ROOT.

P. S.—Prices are subject to change at any time without notice until such time as contract is signed.

WASHINGTON, D. C., *December 22, 1897.*

WM. A. KJELLMANN, *Alten, Norway:*

How soon and at what price can you purchase 600 No. 1 reindeer, trained to harness, and ship the same with drivers? Answer.

R. A. ALGER, *Secretary of War.*

ALTEN, NORWAY, *December 22, 1897.*

SECRETARY OF WAR, *Washington, D. C.:*

Can probably ship 500 reindeer February 15.

KJELLMANN.

WASHINGTON, *December 23, 1897.*

WM. A. KJELLMANN, *Alten, Norway:*

We want, at once, 500 extra good reindeer, trained to harness; with harness, sleds, and drivers. Dr. Sheldon Jackson sails Saturday to assist you. Telegraph him Cecil Hotel, London, December 31, how many you have secured, and long it will take to purchase the remainder, and he will cable you further what to do.

G. D. MEIKLEJOHN,
Acting Secretary of War.

WASHINGTON, D. C., *December 24, 1897.*

WM. A. KJELLMANN, *Alten, Norway:*

No use unless they can be shipped by January 20. Dr. Jackson and Lieutenant Devore sail to-morrow for Alten. In the meantime make every possible effort to assemble the reindeer for shipment.

R. A. ALGER, *Secretary of War.*

NEW YORK, *December 25, 1897.*

WM. A. KJELLMANN, *Alten, Norway:*

Hire all men you need to help you get reindeer. Pay extra prices if necessary; get good deer in time.

SHELDON JACKSON.

ALTEN, NORWAY, *December 31, 1897.*

SHELDON JACKSON,
Cecil Hotel, London, England:

Five men purchasing reindeer. Not reported yet. Moss on hand Roros. Vessel must sail direct Alten America. Transhipping dangerous. Situation entangled. Where can I draw money at once per telegraph? Leave for mountains Monday. Bring one new twenty-dollar gold piece. Call Bretania Hotel, Trondhjem.

KJELLMANN.

CORN EXCHANGE, *Liverpool, January 1, 1898.*

Hon. SHELDON JACKSON,
Hotel Cecil, London:

Owing New Year holiday to-day, fear unable say anything definite before Monday.

ISMAY.

LONDON, ENGLAND, *January 1, 1898.*

WM. A. KJELLMANN, *Alten, Norway:*

What is the trouble? Will telegraph funds if possible to-morrow. Leave Thursday for Alten.

JACKSON.

LONDON, ENGLAND, *January 3, 1898.*

WM. A. KJELLMANN, *Alten, Norway:*

Telegraph Dr. Jackson at Trondhjem Thursday number deer with drivers and outfit you can have ready by 15th. He is on the way; could not telegraph him.

DEVORE.

LONDON, ENGLAND, *January 3, 1898.*

WM. A. KJELLMANN, *Alten, Norway:*

Wire if safe to send *Mississippi* to Alten for reindeer; also if clear of ice during winter.

LERUM.

ALTEN, NORWAY, *January 3, 1898.*

LERUM, *London, England:*

Alten safe and clear for any ships. Too early yet to send vessel.

KJELLMANN.

ALTEN, *January 3, 1898.*

SHELDON JACKSON, *Cecil Hotel, London:*

Trouble is brewing holding moss, reindeer, without funds. Prospects fair. Telegraph funds. Am waiting.

KJELLMANN.

LONDON, ENGLAND, *January 3, 1898.*

Dr. JACKSON, *Hotel Cecil, London:*

Have splendid steamer offered. Three pounds ten shillings. Please come see us quick.

ABDICATE.

LONDON, *January 3, 1898.*

Hon. SHELDON JACKSON,
Hotel Cecil, London:

Hoyland & Co., 8 Great St. Helens, London, offer steamer *Grafton* reindeer Tromsoe to Liverpool. It may possibly be helpful if you see them.

ISMAY.

LONDON, *January 3, 1898.*

Hon. SHELDON JACKSON,
Hotel Cecil, London:

Sutherlands, 38 Sandhill, Newcastle-on-Tyne, offer *North Anglia*, now at Nyborg Lump sum, thousand pounds, Tromso to Liverpool, five days loading, discharging. Steamer 1,359 tons net. Has between decks.

ISMAY.

WASHINGTON, D. C., *January 3, 1898.*

SHELDON JACKSON, *Alten, Norway:*

Secure sufficient moss to last reindeer sixty days after reaching Dyea. Answer.

R. A. ALGER, *Secretary of War.*

ALTEN, NORWAY, *January 3, 1898.*

SECRETARY OF WAR, *Washington, D. C.:*

Will try. Jackson not arrived. Repeated to Jackson, Trondhjem.

KJELLMANN.

ALTEN, NORWAY, *January 4, 1898.*

SHELDON JACKSON,

Grand Hotel, Trondhjem, Norway:

When in Trondhjem, you must kindly deposit 8,000 or 10,000 kroner in Nordenfjeldske Kreditbank as guaranty and successive pay to Mr. A. Skjerdingstad Röros, with whom I have bargained for 900 loads moss. Also arrange about shipping the moss to Trondhjem by rail. Store in open air with cover. Recommending Backes as agents. Probably leave Devore few days. Trondhjem attend this matter. Moss scarce here.

KJELLMANN.

ALTEN, NORWAY, *January 5, 1898.*

SHELDON JACKSON,

Grand Hotel, Trondhjem:

Can not ship reindeer January 15. Don't send vessel too early. Secretary Alger telegraphed yesterday following: "Secure sufficient moss to last reindeer sixty days after reaching Dyea." I answered, "Will try." From our agent, Mr. Skjerdingstad Röros, probably few hundred loads can be had in addition to what is bargained. Notify Skjerdingstad at once per telegraph where to draw funds. Telegraph me necessary funds pay reindeer.

KJELLMANN.

WASHINGTON, D. C., *January 6, 1898.*

WM. A. KJELLMANN, *Alten, Norway:*

Are the reindeer dehorned?

GEO. D. MEIKLEJOHN,
Acting Secretary of War.

ALTEN, NORWAY, *January 6, 1898.*

SECRETARY OF WAR, *Washington, D. C.:*

Not yet.

KJELLMANN.

WASHINGTON, D. C., *January 7, 1898.*

W. A. KJELLMANN, *Alten, Norway:*

Dehorn reindeer if practicable. Answer.

MEIKLEJOHN, *Acting Secretary of War.*

ALTEN, NORWAY, *January 7, 1898.*

MEIKLEJOHN, *Acting Secretary of War:*

Will dehorn some.

KJELLMANN.

TRONDHJEM, *January 8, 1898.*

KJELLMANN, *Bosekop:*

Send ikke ponge tu Skjerdingstad for unsmosen. Jeg har beardul ham send den tu Tonseth Trondhjem som vil bebale ham ved modtagelsen Sammel renum lappum ete i Alten fardig tie endstibning.

JACKSON.

LONDON, *January 6, 1898.*

W. A. KJELLMANN, *Alten, Norway:*

Wire me under address Abdicate, London, how many reindeer you can guarantee by the 15th.

DEVORE.

ALTEN, NORWAY, *January 7, 1898.*

Lieutenant DEVORE, *Cecil Hotel, London, England:*

January 15, none. February 15, 500, with sleds, drivers, and 250 tons moss.

KJELLMANN.

TRONDHJEM, *January 8, 1898.*

W. A. KJELLMANN, *Alten, Norway:*

You can write checks on Nordenfjeldske Kreditbank, Trondhjem, for 3,500 kroner. I leave to-night for Alten. Telegraph me, Grand Hotel, how many deer you have.

JACKSON.

ALTEN, NORWAY, *January 8, 1898.*

SHELDON JACKSON, *Grand Hotel, Thjem:*

Two hundred bargained. Leave for Kautokeino to-morrow if Kreditbank telegraph money to-day. Will meet you Alten.

KJELLMANN.

TRONDHJEM, *January 8, 1898.*

Lieutenant DEVORE, *Cecil Hotel, London:*

E. A. Tonseth, Trondhjem, Norway, will secure reindeer moss. Mail Monday, without fail, check payable to his order for £470. I did not bring sufficient pay for moss. Have steamship call at Trondhjem for 400 tons moss. Local steamers too small to carry it to Alten. I leave to-night; reach Alten Friday. Can telegraph me Tromsoe Monday. Hammerfest Tuesday en route. Will not be ready for steamship before.

JACKSON.

WASHINGTON, D. C., *January 8, 1898.*

SHELDON JACKSON, *Alten, Norway:*

Advise number, when shipped, and number dehorned.

MEIKLEJOHN, *Acting Secretary of War.*

LONDON, *January 8, 1898.*

W. A. KJELLMANN, *Alten, Norway:*

Manitoban will be Trondhjem about 15th. Is moss there or Alten. Leave here to-morrow. Address Allan Bros., shippers, Glasgow.

DEVORE.

ALTEN, NORWAY, *January 8, 1898.*

Lieutenant DEVORE,

Care Allan Bros., Glasgow, Scotland:

Moss mainly at Trondhjem.

KJELLMANN.

JANUARY 10, 1898.

Lieutenant DEVORE, *Cecil Hotel, London:*

Buying delayed for funds. Mail check immediately for $3,000 to Nordenfjeldske Kreditbank, Trondhjem, Norway, payable to their order, and ask them telegraph me the money at Alten. Can be done.

JACKSON.

TRONDHJEM, *January 17, 1898.*

SHELDON JACKSON, *Alten, Norway:*

Funds to your credit.

DEVORE.

CHRISTIANIA, NORWAY, *January 11, 1898.*

SHELDON JACKSON, *Alten, Norway:*

Have you chartered steamer for your reindeer for New York, or can you use for part thereof steamer *Tjome* that has about 105,000 cubic feet at disposal? Could be Trondhjem or Finmarken first half February. Kindly telegraph.

OTTOTHER.

GLASGOW, *January 11, 1898.*

Dr. JACKSON, *Hammerfest, Norway:*

Ship arranged. Hitch animals as cattle. Drivers accordingly. Leave via Newcastle for Trondhjem to-day. Jansen wires possibly all can be loaded by 22d.

DEVORE, *Central Hotel.*

TRONDHJEM, NORWAY, *January 16, 1898.*

SHELDON JACKSON, *Alten, Norway:*

What is situation?

DEVORE.

JANUARY 17, 1898.

Lieutenant DEVORE, *care Tonseth, Trondhjem:*

Kjellmann has bought 500 selected trained reindeer; sleds; 50 drivers. Ready for shipment January 29. January 3 Alger cabled Kjellmann for 500 tons moss extra. Therefore bring 700 tons moss from Trondhjem. Load cool part of ship. Funds where?

JACKSON.

TRONDHJEM, *January 17, 1898.*

Dr. JACKSON, *Alten, Norway:*

Funds Alten's Sparebank.

DEVORE.

ALTEN, NORWAY, *January 17, 1898.*

SECRETARY OF WAR, *Washington, D. C.:*

Kjellmann arrived from interior. Bought 500 choice reindeer. All horns removed. Secured sleds and drivers. Steamship loading moss Trondhjem.

JACKSON.

TRONDHJEM, NORWAY, *January 17, 1898.*

Dr. JACKSON, *Alten, Norway:*

Steamer here about 19th. Alten about 25th. Be ready, if possible, Demurrage if delay.

DEVORE.

TRONDHJEM, *January 17, 1898.*

Dr. JACKSON, *Alten, Norway:*

Lapp here well recommended. Want any more? What terms? Perhaps 70 deer here; want them? Want any more moss than what is here and there?

DEVORE, *Grand Hotel.*

TRONDHJEM, *January 17, 1898.*

Dr. JACKSON, *Alten:*

Did Kjellmann send following telegram from Alten? "January 8. Devore, Abdicate, London, England: January 15, none: February 15, 500, with sleds, drivers, 250 tons moss. Kjellmann. Answer. Haste."

DEVORE, *Grand Hotel.*

ALTEN, *January 18, 1898.*

Lieutenant DEVORE, *Grand Hotel, Trondhjem:*

Kjellmann sent telegram quoted. The moss mentioned was at Röros. Alger afterwards enlarged order to between 600 and 700 tons in all. Only 20 tons here. Bring rest from Trondhjem. Five hundred reindeer bought; no more wanted. Kjellmann promised Lapp Kjeldsberg. Bring him. If another well recommended, bring him also. Will receive same as others. Contracts made here.

JACKSON.

TRONDHJEM, *January 18, 1898.*

Dr. JACKSON, *Alten, Norway:*

Plenty moss here. Has Sivertsen bought reindeer for Jansen there? How many? Am waiting answer last night's telegram.

DEVORE.

ALTEN, *January 17, 1898.*

SIVERTSEN, *Mosjöen, Norway:*

If Bosekop moss for me, notify agent turn it over to me. Discontinue buying. Will not receive it Tromsoe or elsewhere.

JACKSON.

ALTEN, *January 17, 1898.*

Lieutenant DEVORE, *Trondhjem, Norway:*

Be on guard against Tonseth and Jansen. Both worked against Kjellmann and are fleecing us. Sivertsen now buying moss here in competition with me, raising the price and shipping to Tromsoe. Notify Jansen we not receive this unless turned over to me here. To-day's advices: Plenty of moss to be had Röros. Sivertsen, since notified to help me, has wired here for deer in opposition.

Before leaving, inquire post-office for letters.

JACKSON.

TRONDHJEM, NORWAY, *January 18, 1898.*

Dr. JACKSON, *Alten, Norway:*

Jansen has just telegraphed Nelsen and Sivertsen deliver you about 60 tons moss, for which he has advanced 1,800 kroner on our account.

DEVORE.

WASHINGTON, D. C., *January 18, 1898.*

SHELDON JACKSON, *Alten, Norway:*

Cable number attendants. Have any families?

MEIKLEJOHN, *Acting Secretary of War.*

ALTEN, NORWAY, *January 19, 1898.*

MEIKLEJOHN,

War Department, Washington, D. C.:

Probably 15 out of 50 attendants have families. Will cable definitely before sailing. Reindeer men needed permanently in Alaska. Families important. Have not agreed to return any to Lapland.

JACKSON.

WASHINGTON, D. C., *January 19, 1898.*

Dr. JACKSON, *Alten, Norway:*

Inquire how many deer can be shipped in cars 8 by 36.

MEIKLEJOHN.

ALTEN, NORWAY, *January 20, 1898.*

GEORGE D. MEIKLEJOHN,

Acting Secretary of War, Washington, D. C.:

Eighteen or twenty. Same space as Mexican burro.

JACKSON.

TRONDHJEM, *January 19, 1898.*

Dr. JACKSON, *Alten:*

Are reindeer all secure and ready?

DEVORE.

ALTEN, NORWAY, *January 19, 1898.*

Lieutenant DEVORE,

Cecil Hotel, Trondhjem, Norway:

Reindeer secure. Being driven in from interior. Not ready for shipment before 29th.

JACKSON.

ALTEN, *January 18, 1898.*

Lieutenant DEVORE, *Trondhjem, Norway:*

Sivertsen tried to get reindeer here last week, but failed. Yesterday's telegrams answered. Kjellmann contracted Röros moss 7 and 8 kroner load. January 8 I advanced Tonseth on moss 5,600 kroner.

JACKSON.

ALTEN, NORWAY, *January 19, 1898.*

Lieutenant DEVORE, *Grand, Trondhjem:*

Nilson bought Sivertsen and delivered me 80 loads moss at total cost 1,240 kroner. He received from them only 800 kroner, 440 still due. Friend of Jansen wrote here, if they got deer, make good thing out of us.

JACKSON.

TRONDHJEM, *January 20, 1898.*

Dr. JACKSON, *Alten, Norway:*

Plenty moss; do not take more except at low price.

DEVORE.

ALTEN, NORWAY, *January 20, 1898.*

Lieutenant DEVORE, *Trondhjem, Norway:*

Shall I buy 10 kroner, load?

JACKSON.

TRONDHJEM, *January 21, 1898.*

Dr. JACKSON, *Alten, Norway:*

About 700 tons here, do as you think best.

DEVORE.

TRONDHJEM, *January 21, 1898.*

Dr. JACKSON, *Alten, Norway:*

Three men used to handling reindeer want employment. Do you want them? Steamer not yet arrived.

DEVORE.

TROMSOE, NORWAY, *January 21, 1898.*

Dr. JACKSON, *Alten, Norway:*

After order from Mocatta, Jansen, London, is for your account of me in Sweden, bought 500 reindeer, which come to Skibotten Monday, January 24. Telegram from Jansen to-day. You are the receiver. What is to do? Telegraph immediately.

SIVERTSEN.

ALTEN, NORWAY, *January 21, 1898.*

SIVERTSEN, *Tromsoe, Norway:*

I did not order reindeer, and refuse to receive them.

JACKSON.

TRONDHJEM, *January 22, 1898.*

Dr. JACKSON, *Alten, Norway:*

What is your outlay for moss and reindeer?

DEVORE.

ALTEN, NORWAY, *January 22, 1898.*

Lieutenant DEVORE, *Trondhjem, Norway:*

Paid so far, moss and reindeer, 23,875 kroner; much more to be paid. Alten bank unable to furnish money until Monday next. Jansen telegraphs you ordered him to get reindeer. Did you order? If so, how many?

JACKSON.

TRONDHJEM, *January 22, 1898.*

Dr. JACKSON, *Alten, Norway:*

Gave no order to buy any independent of you. Jansen has given me untold trouble.

DEVORE.

ALTEN, *January 22, 1898.*

Lieutenant DEVORE, *Grand, Trondhjem:*

Sivertsen telgraphs that upon Jansen's order he bought 500 reindeer for us and that Jansen now telegraphs him to deliver them to me. I replied that I did not order reindeer and refuse to receive them. Better inform American consul, Trondhjem. No telling what Jansen may try after you leave.

JACKSON.

ALTEN, *January 22, 1898.*

Lieutenant DEVORE, *Grand, Trondhjem:*

Compel settlement with Jansen while you have consul, Trondhjem, to assist you. Remember Jansen paid only 800 kroner here for moss.

JACKSON.

ALTEN, *January 22, 1898.*

Lieutenant DEVORE, *Grand, Trondhjem, Norway:*

See ship's papers custom-house, Trondhjem, are straight. Allow taking cargo Alten and sailing direct America. No custom office here. Telegraph sailing.

JACKSON.

WASHINGTON, D. C., *January 22, 1898.*

Dr. JACKSON, *Alten, Norway:*

Is harness provided?

MEIKLEJOHN.

ALTEN, NORWAY, *January 22, 1898.*

GEORGE D. MEIKLEJOHN,
Acting Secretary of War, Washington, D. C.:

Harness and sleds all provided.

JACKSON.

TRONDHJEM, *January 24, 1898.*

Dr. JACKSON, *Alten, Norway:*

Ship here fear won't hold all moss. How many Lapps go? Have you sufficient funds?

DEVORE.

ALTEN, NORWAY, *January 24, 1898.*

Lieutenant DEVORE, *Trondhjem, Norway:*

Probably sufficient funds. About 80 to 100 people and grown children. If ship won't hold moss, place 200 tons with commission house for sale; 500 tons sufficient for us. Take, however, all you have room for. Perhaps better pack some ice with moss.

JACKSON.

TRONDHJEM, *January 24, 1898.*

Dr. JACKSON, *Alten, Norway:*

Ship could not come to wharf. Loading by lighter. Moss broken up; not packed; can't take all. Ice impracticable. Kjeldsberg not reported.

DEVORE.

TRONDHJEM, *January 26, 1898.*

Dr. JACKSON, *Alten, Norway:*

Loading delayed by rough water. Probably leave here to-morrow morning. Is Treasury check taken there?

DEVORE.

ALTEN, NORWAY, *January 26, 1898.*

Lieutenant DEVORE, *Trondhjem, Norway:*

Treasury checks taken if bank has sufficient money.

JACKSON.

TRONDHJEM, *January 27, 1898.*

Dr. JACKSON, *Alten, Norway:*

Storm stopped loading. Has bank sufficient money?

DEVORE.

ALTEN, *January 27, 1898.*

Lieutenant DEVORE, *Grand, Trondhjem:*
Bring 3,700 kroner.

JACKSON.

JANUARY 28, 1898.

Lieutenant DEVORE:
A few Lapps backed out. If three or four well recommended, used to reindeer. bring them. Salary 1,000 kroner year, with food and clothing.

JACKSON.

TRONDHJEM, *January 28, 1898.*

Dr. JACKSON, *Alten:*
Leave for Alten to-night. Be ready.

DEVORE.

HAMMERFEST, *January 29, 1898.*

Dr. JACKSON, *Alten:*
When is *Manitoban* expected? Will she go direct to sea when leaving Alten or via another seaport in Norway? Do you wish the vessel cleared northward without calling at Hammerfest? In that case I will send an officer at the expense of the steamer.

DERICKSON, *Custom-House Inspector.*

ALTEN, NORWAY, *January 29, 1898.*

TOLDBODEN, *Hammerfest:*
Expected Tuesday. Will consult captain. Let you know after arrival.

JACKSON.

WASHINGTON, D. C., *February 2, 1898.*

SHELDON JACKSON, *Alten, Norway:*
You sail when?

MEIKLEJOHN.

ALTEN, NORWAY, *February 3, 1898.*

GEORGE D. MEIKLEJOHN,
Acting Secretary of War:
Ship delayed by storms. Expect to sail to-morrow morning. Will cable again.

JACKSON.

ALTEN, NORWAY, *February 3, 1898.*

SECRETARY OF WAR, *Washington, D. C.:*
Manitoban sails to-day with 530 reindeer and 87 Lapps, men and women.

JACKSON.

MR. H. E. REDMEYER GIVEN CHARGE OF REINDEER EN ROUTE TO CIRCLE CITY.

SEATTLE, WASH., *March 16, 1898.*

SIR: You are hereby appointed to take charge of a herd of reindeer and a party of drivers and convey them across from Haines to Circle City, where you will await further instructions.

Your salary until February 1, 1899, will be $75 per month and rations, to be paid from the Alaska relief fund.

After February 1, 1899, your salary will be at the rate of $900 a year, without rations, to be paid from the reindeer fund.

SHELDON JACKSON,
United States General Agent of Education in Alaska,
Special Agent of War Department.

Mr. HEDLEY E. REDMEYER.

OFFICERS OF THE ARMY TO ASSIST DR. SHELDON JACKSON.

HEADQUARTERS DEPARTMENT OF THE COLUMBIA,
Vancouver Barracks, Wash., March 17, 1898.

Commanding Officer, Fort St. Michael, Alaska.

SIR: By direction of the Assistant Secretary of War you are instructed to cooperate with Dr. Sheldon Jackson, agent for the Interior Department, and extend to him every facility at your command in connection with his mission of introducing reindeer into Alaska not incompatible with the duty to which you have been assigned, the execution of which is paramount to all other considerations.

By command of Brigadier-General Merriam:

THOMAS H. BARRY,
Assistant Adjutant-General.

FORT ST. MICHAEL, ALASKA, *July 12, 1898.*

Official copy respectfully furnished Dr. Sheldon Jackson for his information.

EDWARD BELL,
Second Lieutenant, Eighth Infantry, Adjutant.

MR. H. E. REDMEYER COMMENDED TO MERCHANTS.

WASHINGTON, D. C., *April 6, 1898.*

To the agents of the North American Trading and Transportation Company or Alaska Commercial Company, Yukon River, Alaska.

SIRS: This will introduce to you Mr. Hedley E. Redmeyer, who is in charge of a herd of Government reindeer with the attendant drivers.

If he and his party should by accident lose their provisions, or be in urgent need of more supplies, you are hereby authorized to furnish the same and send bill in triplicate, duly signed, to me, Bureau of Education, Washington, D. C.

Very truly, yours,

SHELDON JACKSON,
United States General Agent of Education in Alaska.

MR. H. E. REDMEYER COMMENDED TO TRANSPORTATION COMPANIES.

WASHINGTON, D. C., *April 6, 1898.*

To the transportation companies on the Yukon River, Alaska.

SIRS: You are hereby authorized to furnish second-class passage for Mr. Hedley E. Redmeyer and such reindeer drivers as he may have with him to St. Michael. The bill for the same will be made out in triplicate and mailed to me, Bureau of Education, Washington, D. C., for payment.

If he should have reindeer for transportation, you are authorized to take them down the river to Nulato, or a point where the trail goes overland to Unalaklik and St. Michael.

Very truly, yours,

SHELDON JACKSON,
United States General Agent of Education in Alaska.

INSTRUCTIONS TO WILLIAM A. KJELLMANN.

HAINES, ALASKA, *April 9, 1898.*

SIR: When you have placed the reindeer on good pasturage in the neighborhood of the summit on the Dalton trail, and assisted in getting the supplies up to the reindeer, so that Mr. Redmeyer and his party can continue their journey, without further assistance, across the country to the moss hills back of Circle City, you will take the balance of the party, together with the supplies, to Fort Townsend to await the time when they can be sent to Unalaklik.

Before leaving Haines you will settle all bills, so far as you can, and where they can not be paid for want of funds, procure the bills in writing to be settled hereafter, and send both receipts and bills to me at Washington. You will also pile up in a neat manner any sleds that may be left. Extra harness, together with supplies, will be sent to Fort Townsend, to be taken afterwards to Eaton Reindeer Station, near Unalaklik. Mark everything "U. S. R. S." or "Reindeer," Fort Townsend, Wash. On your way down the coast write me a full account of the herd and your success and adventures in reaching the summit. Also send a list of the men sent in with Mr. Redmeyer.

Very truly, yours,

SHELDON JACKSON,
Special Agent, War Department.

Mr. WILLIAM A. KJELLMANN.

INSTRUCTIONS TO H. E. REDMEYER.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION, ALASKA DIVISION,
Washington, D. C., April 9, 1898.

SIR: When Mr. William A. Kjellmann returns to the States you, as assistant superintendent of reindeer Government stations in Alaska, will assume the control of and be responsible for the safe care and transportation of 275 reindeer, with sleds, harness, and other property of the Government, from Chilkat to pasturage near Circle City or Fort Cuddahy, on American soil. When you reach such pasturage you will camp for the summer, or until further instructions. Mr. Kjellmann can direct you to good pasturage on the hills back of Circle City. Unless they arrive before you start inland, while you are in camp near Circle City, it is expected that 200 head of reindeer will be sold to Mr. P. C. Richardson, who has secured the carrying of the mail from Juneau via Dawson and Circle City to the mouth of the Tanana; but you will not deliver them to him or anyone else without a written order from myself or Mr. Kjellmann, which order must specify the number of deer, sleds, and harness that is to be turned over to Mr. Richardson or his agent, also the drivers, by name, that are to go into Mr. Richardson's employ.

It is also expected that another 100 head of deer will be sold to the Klondike, Yukon and Copper River Company, and you will deliver to them or their authorized agent only upon a written order from me or Mr. Kjellmann, specifying number of deer, sleds, harness, etc., also, by name, the drivers.

After the above 200 are taken from the herd you are authorized to sell the remaining reindeer in lots of 10, at $125 each. You must in every instance collect the pay before delivering the animals and deposit it to my credit with the nearest agent of the North American Trading and Transportation Company, taking his receipt for the same. You can allow one driver to accompany each lot of 10 sold to private parties. If all the deer in your charge should be sold, you will then take passage down the river to St. Michael and then up the coast to Eaton Reindeer Station, near Unalaklik, bringing with you such drivers as you may have left, also the Government property in your hands.

I give you an order on the transportation companies for passage down the river.

The rations that you take in with you are expected to last until August 31, by which time you will be able to reach the Eaton Reindeer Station, where the balance of the rations will be sent.

You will constantly keep before you that while it is desirable that Military Expedition No. 1, Captain Brainard commanding, and United States Interior Department herd, in charge of yourself, should cross the country together from Chilkat to Circle City, yet yours is an independent command—that you are not under orders from Captain

Brainard. The Secretary of the Interior will hold you personally responsible for the safety of the reindeer and other property intrusted to your care.

If the military officers wish to go down to Dawson City, you will not take the herd in your care down into the valley, but will remain on pasturage on the hills until they go down and return.

While you are entirely independent of the military expedition, yet I wish you to render it such assistance in crossing the country as you can without injuring or overworking the deer in your charge.

The harness belonging to the sleds you will, if you can, take with you after the sleds are left.

If the snow gives out entirely before you reach Circle City, you will cache your sleds and make a note of the location, so that they can be recovered next fall. You will take with you a board to place by the sleds, upon which is painted "These sleds are the property of the United States."

While in camp drill the men in speaking English. Encourage them to try and use the English they may learn. Use it yourself as far as possible in conversing with them.

You will from time to time send a man to Circle City for the mail, which will be sent to that post-office on the steamers that will arrive from the middle of July onward.

If by any chance you are overtaken with disaster and lose your rations, you can apply to either the North American Trading and Transportation Company or the Alaska Commercial Company, and have the charge made to the United States Bureau of Education, in triplicate, and mailed to me at Washington.

Very truly, yours,

SHELDON JACKSON,
United States General Agent of Education in Alaska.

Mr. HEDLEY E. REDMEYER.

REINDEER CAN BE SOLD AT COST.

DEPARTMENT OF THE INTERIOR,
Washington, April 25, 1898.

SIR: Referring to your verbal report of even date regarding the reindeer in Alaska turned over to you by the War Department, I have to state that authority is hereby granted you to sell said reindeer at such prices per capita as in your judgment may be proper. In no case, however, shall they be sold at a less price than what they cost the Government per head.

Very respectfully, C. N. BLISS, *Secretary.*

Dr. SHELDON JACKSON,
General Agent Education in Alaska.

REPORT FROM H. E. REDMEYER.

MOUNTAIN CAMP, *May 31, 1898.*

DEAR SIR: When you receive this letter Mr. Paulsen will be in Seattle and can give you the necessary information in regard to us and our reindeer. There is no chance whatever to use the sleds, as the snow is all gone. We had only one night hard crust since you left us, and then we went about 3 miles and the deer were all tired out, being still weak from the effects of starvation. Seeing that it might take two months before we can reach White River, and then be without provision, I decided to send eight men down to Seattle and from there take a steamboat for St. Michael and further on to Circle City. We are preparing ourselves for a hard and long travel. We are making pack saddles for the deer and will probably be ready to start from here the 10th of June and cross the White River about the 10th of July. We have provisions for seven men until October, or last of October, so I think we shall be able to go through all right. It would perhaps be well to send Paulsen and his men to Circle City about the last of August, with four or five months' provisions, to wait for us, or in the last of September start out to meet us. Well, it remains for you to decide what to do. All I can say is that I'll push it through all right, so you need not fear; you can depend on me. My best regards to Dr. Jackson.

Yours, very truly, HEDLEY E. REDMEYER.

Mr. W. A. KJELLMANN.

INSTRUCTIONS TO O. PAULSEN.

MOUNTAIN CAMP, *May 31, 1898.*

SIR: On the 1st of June you will take control of and be responsible for the care and transportation of seven Laplanders. You will return with them to Haines Mission and there immediately secure tickets for them and for yourself on a passenger steamer for Seattle. On arriving at Seattle, telegraph to Mr. Kjellmann and find out whether he has gone to St. Michael or not. If he is in the States, you will then, either by telegraph or mail, communicate with him and explain why you were sent back, and he will then take charge of you and your men. If, however, Mr. Kjellmann has gone to Alaska, you will then immediately secure tickets for yourself and your men on a passenger steamer for St. Michael. After you reach St. Michael, secure ticket for your men and yourself on a Yukon River steamboat and continue your journey to Circle City, where you will stay and await orders from Mr. Kjellmann, who will be there by that time.

Respectfully, yours,

HEDLEY E. REDMEYER,
In Charge of Government Reindeer Expedition, Alaska.

The following Laplanders will be in your charge: Ole Klemetsen Hatta, Alfred Salamonsen Nilima, Mathis Klemetsen Niloka, John Andersen, Klemet Nilsen, Anders Persen Utzi, and Johan Pettersen Stalogargo.

Mr. O. PAULSEN.

RELIEF SUPPLIES SHIPPED TO DR. SHELDON JACKSON.

DYEA, ALASKA, *June 12, 1898.*

SIR: In compliance with telegraphic instructions from Major-General Merriam, dated June 5, 1898, I have the honor to inform you that I have this day shipped to you per steamship *Utopia* all the relief supplies remaining unsold. Inclosed are invoices and receipts for the same. Kindly sign duplicate receipts and return them to me.

Very respectfully,

HENRY C. CABELL,
First Lieutenant, Fourteenth Infantry,
A. G. M. and C. S., Alaska Relief Expedition.

Eight inclosures.

Dr. SHELDON JACKSON, *Seattle, Wash.*

CLOTHING AND SUBSISTENCE FOR LAPPS, NORWEGIANS, FINNS, ETC.

WAR DEPARTMENT,
Washington, June 18, 1898.

DEAR SIR: In response to your letter of 6th instant, in which you ask that the commanding general, Department of the Columbia, be authorized and directed to furnish the Lapps, Norwegians, Finns, etc., clothing as well as subsistence, in accordance with contract, and that permission be granted you to turn over to the Interior Department such subsistence received from this Department and remaining on hand at the expiration of this Department's contract with the Lapps, January 31, 1899, I beg to inform you that under date of 13th instant the Quartermaster-General was directed to advise the chief quartermaster, Department of the Columbia, by wire, to furnish you clothing for the Lapps in that Department, under your charge, according to the terms and conditions of the contract between the said Lapps and the United States Government, and that officer reported, under date of the 15th instant, as follows:

Respectfully returned to the honorable the Secretary of War with report that telegraphic directions have this day been sent to the chief quartermaster, Department of the Columbia, to carry out the foregoing instructions of the Secretary of War, and, further, to forward by mail a report of the action taken.

The question of granting you authority to turn over to the Interior Department such subsistence stores as may be on hand January 31,

1899, is now receiving consideration as to the legal question involved, the outcome of which will be transmitted to you by further letter at an early day.

Very respectfully, G. D. MEIKLEJOHN,
Acting Secretary of War.

Dr. SHELDON JACKSON,
St. Michael, Alaska, via Seattle, Wash.

REINDEER FURNISHED THE MAIL CONTRACTOR.

SEATTLE, *June 27, 1898.*

SIR: You are hereby authorized to turn over to Mr. S. D. I. Emerson or his order as many reindeer as he may require for the postal service, upon the payment for the same, by certified check made out to my order, at the rate of $125 for each animal.

You will remain with the balance of the deer unsold until further orders, retaining a sufficient number of Lapps to care for the deer. The other Lapps can be given to Mr. Emerson, and perhaps he will leave them all together for the present.

Very truly, yours,

SHELDON JACKSON.

Mr. H. E. REDMEYER,
In Charge of the Reindeer.

DISPOSITION OF ALASKAN RELIEF EXPEDITION SUPPLIES.

WAR DEPARTMENT,
Washington, July 8, 1898.

DEAR SIR: As supplemental to Department letter of 18th ultimo, you are informed that your request of June 6, for permission to turn over from the War Department to the Interior Department any excess of butter and bacon from the relief supplies which may be on hand January 31, 1899, is granted.

Very respectfully, G. D. MEIKLEJOHN,
Acting Secretary of War.

Dr. SHELDON JACKSON,
St. Michael, Alaska, via Seattle, Wash.

REINDEER TO BE RETURNED TO CAPE PRINCE OF WALES AND POINT RODNEY.

UNITED STATES STEAMER BEAR,
Off Cape Prince of Wales, Alaska, July 13, 1898.

MY DEAR SIR: Mr. Jarvis informs me he promised Mr. Lopp and Charlie that the deer taken from Cape Prince of Wales and Point

Rodney should be returned this season. Under this promise the deer were delivered to him.

I earnestly hope nothing will be allowed to interfere with the delivery of the deer to Mr. Lopp at the earliest possible moment.

I understand that Mr. Kelly has about 1,000 deer at St. Lawrence Bay.

Respectfully, yours, F. TUTTLE,
Captain, Commanding Relief Expedition.

Dr. SHELDON JACKSON,
Agent Education for Alaska.

REINDEER HERD AT POINT BARROW.

HOTEL HEALY,
St. Michael Island, July 15, 1898.

DEAR SIR: Learning that the domestic reindeer sent to Point Barrow for the relief of the whalers were not all needed this spring, I have sent some herders with provisions to take charge of them.

It is my plan to keep the herd together this coming year. But in the summer of 1899 I hope to be able to make arrangements by which a herd can be set aside for your mission and another for the Episcopal Mission at Point Hope. In the meantime the herd will be kept on suitable pasturage between Point Hope and Point Barrow.

You are hereby authorized and directed to turn over the herd to the Laplander who brings you this letter.

Very truly, yours,
SHELDON JACKSON,
United States General Agent of Education in Alaska and Superintendent of Government Reindeer.

Dr. H. RICHMOND MARSH,
Point Barrow.

REINDEER HERD AT POINT HOPE.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION, ALASKA DIVISION,
St. Michael, July 15, 1898.

SIR: You are hereby directed to turn over any reindeer in your charge to Electoona and Ahlook, Government herders, who will drive them into the main herd between Point Hope and Point Barrow.

Very truly, yours,
SHELDON JACKSON,
Superintendent of Reindeer.

Dr. DRIGGS, *Episcopal Mission*
(or whoever is in charge of domestic reindeer in the vicinity of Point Barrow.)

MR. N. V. HENDRICKS TAKES OVERSIGHT OF REINDEER BELONGING TO THE EPISCOPAL MISSION.

ST. MICHAEL, ALASKA, *July 22, 1898.*

SIR: I have the honor to acknowledge the receipt of your letter of the 21st with reference to your taking the herd of reindeer belonging to the St. James Episcopal Mission, Rev. J. L. Prevost in charge.

In reply permit me to say that on the part of the Government I see no objections to your doing so, provided you assume the same obligations that were assumed by Mr. Prevost and carry out the letter and spirit of the purpose for which said deer were loaned by the Government, to wit, the introduction of domestic reindeer among the natives and the training of some of their young men to the management and care of the deer. When a native, after an apprenticeship of five years, has learned the business he is to be given 18 female and 2 buck deer as a starter for his private herd. Any time after five years from the date of the original loan the Government can call for 50 head.

I hope you may be able to make satisfactory arrangements with Mr. Prevost, as I judge you will give more time to the development of the herd than the missionaries will be able to do.

If you complete your arrangement, you will have Bishop Rowe or Mr. Prevost address a letter to Mr. William A. Kjellmann, requesting him to send the Episcopal herd now at Golovin Bay overland to St. James Mission, and turn them over to your care. Also arrange with Mr. Kjellmann for two Lapps. Until the deer loaned by the Government are returned, the herd will be open to the inspection of the Government agent.

Truly, yours, SHELDON JACKSON.

Mr. N. V. HENDRICKS,
Anvik, Alaska.

SUPPLIES RECEIVED BY DR. H. R. MARSH.

UNITED STATES STEAMER BEAR,
Point Barrow, Alaska, August 4, 1898.

Received from Capt. F. Tuttle, Revenue-Cutter Service, commanding U. S. S. *Bear*, commanding United States relief expedition, 391 reindeer, and the following articles, viz, one hundred 45/70 cartridges; 12½ pounds powder; 1,000 primers, No. 2; 50 pounds soap; 1 barrel pork, 200 pounds; 1 box coffee, 36 pounds; 1 tent and stove; 2 sacks beans, 176 pounds; one-half barrel sugar, 140 pounds; 20 sacks flour, 1,000 pounds; 7 sleds; 8 harnesses, on account of the Board of Home Missions of the Presbyterian Church of the United States.

H. R. MARSH, M. D.

SIBERIAN REINDEER ISSUED TO CAPE PRINCE OF WALES.

TELLER REINDEER STATION, *August 12, 1898.*

DEAR SIR: I regret to say that I have only secured 173 or 174 reindeer for you this season, many of them fawns. That will be all for this year.

When I reached Siberia Mr. Kelly and assistants had left, leaving no word of who had the deer in charge or how many they had. The result was I had to take the word of the natives, and only found 100 head as the result of Mr. Kelly's work. I am very sorry not to be able to replace the whole herd this season. I hope to do better next. The steamer *Del Norte* was near your place about 11 o'clock last night, but as it was too rough to land the deer we came here. We attempted to swim the deer ashore and lost 13. Sorry not to see you even for a few minutes. I leave some blank books, and papers, and magazines for you at this station in charge of a miner, Dr. Brandon, who will live in station house this winter.

Your friend, SHELDON JACKSON.

W. T. LOPP, Esq.,
Cape Prince of Wales.

DR. BRANDON PLACED IN CHARGE OF TELLER REINDEER STATION

TELLER REINDEER STATION, *August 12, 1898.*

SIR: You are hereby requested to take charge of the Government buildings and other property at this station and see that the same are not injured by natives or whites during your sojourn in this place, in return for which you are given the use of the buildings free of rent.

If circumstances cause you to remove before some one arrives next season to look after the property, you will kindly leave the key with Ku to ke na, and ask him to look after the property for the Government. Very truly, yours,

SHELDON JACKSON,
United States General Agent.

Dr. BRANDON, *Port Clarence, Alaska.*

A LOAN OF REINDEER OFFERED TO THE ROMAN CATHOLICS.

HOTEL HEALY, *St. Michael, August 20, 1898.*

MADAM: The Government is now ready to loan to your order 100 head of reindeer (the Swedish Mission at Golovin Bay received but 50; also the Episcopal Mission at the mouth of the Tanana 50) under the following conditions, which are the same as given to the other societies, to wit:

First. The herd is to be kept for five years in the neighborhood of Nulato, the priest there taking the oversight of them for you.

Second. At the end of five years, the same proportion of male and female deer are to be returned to the Government, your society keeping all over and above the 100 deer to be returned to the Government.

Third. The Government will pay the salary of a Lapp and his family, who will take charge of the herd and teach your young men the business. It is expected that in five years some of your young men will have so mastered the business of raising reindeer that you can dispense with the further services of a Lapp.

Fourth. Your society will be expected to furnish the Lapp and his family food and clothing while in your employ. Mr. Kjellmann can furnish you an unmarried Lapp if you prefer.

Fifth. If these terms are agreeable to you, you will mail to me, Bureau of Education, Washington, D. C., a written acceptance of them, and inclose a copy of the same to William A. Kjellmann, superintendent of reindeer station at Unalaklik, via St. Michael, with the request that he send the deer for you to the priest at Nulato.

Sixth. Mr. Kjellmann will then drive them up to Nulato for you.

We specify their being kept for the first five years in the vicinity of Nulato for important public interests that I will mention to the priest when I see him.

Hoping you may find the herd a help in your mission work and in time an unfailing supply of fresh meat for your table, I remain,

Very respectfully, yours,

SHELDON JACKSON,
United States Agent of Education in Alaska.

The MOTHER SUPERIOR, HOLY CROSS MISSION,
Yukon River, Alaska.

LOAN OF REINDEER ACCEPTED BY ROMAN CATHOLICS.

ST. MICHAEL, ALASKA, *September 15, 1898.*

DEAR SIR: Please find inclosed a written acceptance, on behalf of the Catholic Mission at Nulato, of your proposal, dated August 20, 1898. After the conversation I had with you on the subject I referred it directly to Very Rev. Fr. Perre, and so also did the mother superior in Holy Cross Mission. I am now authorized by him to accept it in the terms here inclosed. A copy of the same acceptance shall be forwarded to Mr. Kjellmann, together with the substance of the following observations: First. We have not found as yet at or about Nulato the desired spot where to locate the herd. We should, therefore, if it be sent this year, leave it almost midway between Holy Cross and Nulato, on the Shageluk River, where it will have an abundant supply of food for the winter. Second. We prefer to have a married Lapp with his family. Third. We consider it most important for the success and good working of the plan that the deer be delivered over to us in excellent condition, and we would insist much more on quality than

on number, and would prefer 50 good ones to 100 in a rather poor condition.

Yours, truly, JULIUS JETTÉ, *S. J.*

Dr. SHELDON JACKSON,
United States Agent of Education in Alaska.

ST. MICHAEL, ALASKA TERRITORY,
September 15, 1898.

The proposal made by Dr. Sheldon Jackson to intrust the Catholic Mission at Nulato with the charge of 100 head of reindeer having been handed to me through Very Rev. Father J. B. René, S. J., prefect apostolic of Alaska, I hereby declare that I accept it as it stands and under the conditions stated in the letter of Dr. Jackson, dated August 20, 1898. This acceptance is on behalf of the Catholic Mission at Nulato.

JULIUS JETTÉ, S. J.,
In charge of the Nulato Mission.

REPORT OF H. E. REDMEYER.

LAKE KLUKSHU, NORTHWEST TERRITORY,
September 1, 1898.

DEAR SIR: I thought that I had better report our whereabouts to you or to the Department of the Interior, the cause of our delay, also the condition of the reindeer. When we left the pasturage near Pleasant Camp, May 22, we had 164 reindeer, which was all that recovered from the starving condition they were in; the rest died of starvation or disease caused by starvation. These 164 were alive, but there were many that could just follow the herd which I knew would die later on. The number has been considerably reduced, so the total number of reindeer in our herd is at the present date 144. Three of those are sickly yet and do not look good, but the rest are in a splendid condition and are fat and healthy.

Of the 20 deer that died, the majority died from not having enough strength to digest the food, while some died of a disease which the Laplanders call in their language "sloopo;" it rots the hoof away. Three died from accidental causes.

In regard to our travel I must say that I have had nothing but hard luck. I shall only in a brief letter indicate the details.

As before stated, I left Pleasant Camp, May 22, after the deer had gained a little strength. It was too late in the spring, and the snow was melting away fast. We could do nothing as long as the snow was soft, so we had to wait for cold nights and then travel at night.

Seeing that I could make hardly any progress and that it might take us all summer to reach Circle City and our provisions would last us only to the 31st of July, I decided at once to let eight of my men go down to Haines Mission, and take a steamer for Seattle, and then find out if Mr. Kjellmann was in the States or not. If he had gone

to Alaska, I instructed them to secure passage via St. Michael to Circle City, where they would meet Mr. Kjellmann. I made out orders to steamboat companies, restaurants, and lodging houses at Seattle, payable by you, similar to those orders you had given me. There were seven Laplanders, with Mr. O. Paulsen in charge of them; the remaining seven of us continued to travel and went about 43 miles, when we found that the snow was all gone. Our only chance to travel was to abandon our toboggans and commence packing our provisions on the deer; but as the deer were in such a poor condition, we had to wait until they gained more strength, as it is harder for an animal to pack than to pull. In the meantime we made pack saddles and divided our provisions into 25-pound packages or sacks. This was not all that detained us; we could not follow the Dalton trail on account of the brush and underwood, as we would surely have lost some of our deer. So we had to stick to the mountain, which is nothing but needle points. We crossed the valley from one side to the other in order to find more level ground or a good mountain to travel on. That is the way we have been doing, until now we are in such a range of mountains that it is impossible to travel. I therefore left the deer in charge of Mr. Kjeldsberg on this mountain and went about 40 miles alone on the Dalton trail. After I came back I decided to take the Dalton trail from here to Hutchie village, as there is not so much brush or underwood.

Before going, I wanted to report to you, as I have done now; also go down to Dalton Post, which is about 30 miles from here, and try to secure one month's provisions. We have provisions to last us to the 28th of October, but it might take a longer time to reach Circle City, and we want to be sure. I shall try to get it from Dalton. I will save the Government from buying shoes if I can get a green cowhide, as the Laplanders can make their own shoes or moccasins of that. I'll make the order payable by the War Department or by you. No disease has been among my men, as they, as well as myself, have had hard work, and our provisions are limited. I will only say this much: The deer will be brought in safety to Circle City if no unforeseen mishap occur. After the journey is at an end I shall send you my diary, also the report in full. It is hard to tell when I will be in Circle City. I don't believe that I will reach the Hutchie Valley before the last of this month, and by that time we will have snow sufficient to use the sleds, which we shall have to make then. It won't take a long time to drive in there after we get the snow. Hoping you believe me faithful to what I am intrusted with, I remain,

Yours, very truly,

HEDLEY E. REDMEYER,
In charge of the United States Government Reindeer Expedition, Alaska.

Dr. SHELDON JACKSON,
Washington, D. C.

AGRICULTURE IN THE YUKON VALLEY.

WASHINGTON, D. C., *December 31, 1897.*

SIR: On the 30th of April last I had the honor to receive through you a request from the honorable the Secretary of Agriculture that I should secure, during my expected tour of Alaska, such items as I could with reference to the agricultural and horticultural possibilities of the region adjacent to the Yukon River. In compliance with that request, I beg permission to submit herewith the following report to the honorable the Secretary of Agriculture:

Leaving Washington on the 1st of June, I embarked at Seattle on the steamship *Portland* on the 12th, reaching Unalaska on the 21st and St. Michael, 60 miles above the mouth of the Yukon River, on the 26th. Taking passage on the river steamer *P. B. Weare*, I left St. Michael July 5, entering the north channel of the Yukon delta, a distance of 72 miles, that same forenoon. The trip was continued the entire length of the Yukon River through Alaska into the Northwest Territory of Canada to Dawson (Klondike), a distance of 1,652 miles. I reached Dawson July 25, and, after remaining there two days, left for my return trip down the river, reaching St. Michael August 24, having spent nearly two months in inspecting the river region and one month at St. Michael.

While the Yukon Valley will never be an agricultural section in the same sense in which that term is understood in the Mississippi Valley, yet it has agricultural capacities much in advance of the public sentiment of the country.

With reference to climate, soil, and natural productions, the Yukon Valley can be divided into three sections.

First. The delta and mouth of the river, the climate of which is affected by its proximity to the ocean. In this section may also be properly included the shores of Norton Sound.

Second. The Middle Yukon Valley from Ikogmute (315 miles from the mouth of the river) 582 miles to the mouth of the Tanana.

Third. The Upper Yukon Valley, extending from the ramparts to the mouth of the Pelly, a distance of 900 miles. The Upper Yukon is differentiated from the middle district mainly by the difference of altitude and climate.

THE DELTA DISTRICT.

The plants of this region are the dwarf willow and birch in the ravines and on the flats, with dwarf pines back from the ocean. During the summer season many kinds of wild flowers abound. This is equally true of the whole length of the river and its tributaries. Wild onions are found in sandy places near the ocean beaches, but not much used by the natives. Salmonberries and blueberries are found on short bushes in the moss on the tundra. These ripen about the 1st of September. They are gathered by the natives and preserved in fish or seal oil. Thus preserved they are considered a great delicacy. The most characteristic of all the natural productions are the mosses and lichens, especially the *Cladonia rangiferina*, which is the native food of the reindeer. There are also several kinds of grass suitable for forage, the largest and most abundant of which is a species of red-top, growing from 2 to 4 feet high. Both the *Cladonia rangiferina* and the red-top are found throughout the whole valley from the head to the mouth of the river, a distance of over 2,000 miles. The snow leaves the ground bare about June 1, and returns early in October. Hard frosts may be expected the last of September. The extreme lowest temperature (Fahrenheit) in winter is from —36° to —40° and the highest in summer 87°. The average for June and July is 48°. The frost never wholly leaves the ground, which thaws out to a depth of from 1 to 4 feet, according to exposure. The snow seldom exceeds 2 feet in depth. June and July are the rainy months. In 1897, an unusually dry season, the cloudy days exceeded the fair. In August the fair days exceeded the cloudy.

The soil is of a loose clay, mixed with gravel covered with moss, and in some places with peat and moss. The beaches on the ocean and first terrace back of the beach consist of gravel. The delta is composed of silt brought down and deposited by the river.

In preparing the ground for cultivation, the peat and moss on the surface are usually carted away; sometimes it is dried and burned. In other cases it is cut up and mixed with the soil. On the coast seaweed is gathered and mixed with the soil to enrich it. When well pulverized, the ground is thrown up into high ridges, both for drainage and exposure to air and sun. There are large areas available for such cultivation, but the expense and labor are so great that practically only small areas will be cultivated for home use. The missionaries of the Swedish Evangelical Union at Unalaklik and at Golovin Bay, and also the traders at both places, are raising good potatoes, turnips, rutabagas, beets, lettuce, and radishes. The soil is ridged up. The potatoes are kept in a deep cellar. Goats and cattle have been tried at the mission stations and at the trading station, St. Michael. The goats are usually killed by Eskimo dogs. The cattle do well in summer, but have a hard time during the long winter. The only domestic animal suited to the climate, that thrives and

proves profitable for raising, is the reindeer. It will be valuable for milk, cheese, meat, transportation, and clothing. Cattle are kept housed up all winter. The reindeer are pastured alike in summer and winter, thrive without any shelter other than that afforded by the valleys among the mountains, and require no other food than the moss, which they procure for themselves. No other stock raising is practicable or profitable.

Botanical specimens from this district were prepared and forwarded to me by Rev. T. L. Brevig, of Port Clarence, and by the missionaries of the Swedish Evangelical Union at Unalaklik. These I have sent to the Department of Agriculture.

THE MIDDLE YUKON DISTRICT.

The plants of this district are the larch, fir, birch, and cottonwood trees, alder, willow, and various wild berry bushes enumerated under the head of berries. Of edible roots there is a sour dock, or wild rhubarb, the leaves of which make excellent greens. The natives prepare it for winter use by salting down the leaves in barrels and then sinking the barrels in the frozen ground to keep the contents cool. There is also a native root called quactloi, which is well liked by the natives. Along the rivers is a rush resembling the common horsetail rush that bears black tubers the size of a pea, also a species of wild rice and two herbs and a fungus growing upon the birch which are used for tea. Wild berries abound. These are a kind of whortleberry, salmonberry, bearberry, blueberry, blackberry, cranberry, redberry, currants (red and black), crowberry, raspberry, a sort of strawberry (very fragrant), the juniper berry, on the rocky hills, and the roseberry.

Grasses are abundant for forage, especially the redtop, which grows in places from 5 to 6 feet high. There is also a species of purslane and chamomile, of which the cattle are very fond. Marshalia augustifolia, nasturtium, equisetum, larkspur, crowfeet, bulrushes in swamps, white and yellow water lilies, some lycopodiaces, and several kinds of mosses and lichens, mostly on the hills, including the reindeer moss, are found.

In ascending the Yukon the left (north) bank is hilly and furnishes many good spots for cultivation. The right, or south, is flat, at least to the mouth of the Tanana, and covered with forests and marshes. The same is, to a considerable extent, true of the valleys of the tributaries to the Yukon. The bottom lands are subject to overflow.

The hillsides with a southern exposure are most favorable for raising vegetables. The ground is usually free from snow about the 1st of June, though in sheltered places it remains until the last of June. Lettuce and radish seeds have germinated as early as May 26. In 1895 the first wild-currant blossoms made their appearance May 30. The season of 1896 was a late one. The ice broke up in the river May

28, and for a week afterwards the lowlands were flooded. Hard frosts are expected in the latter part of September. In 1888, at Anvik, the first killing frost was August 26; 1889, September 20, and 1896, September 23. At Nulato, on August 25, the thermometer registered 25°.

At Koserefski, for the years 1894-1897, the maximum cold in January and February varied from —50° to —59°. For the growing months of May, June, July, August, and September the temperature was as follows:

Date.	Maximum.	Minimum.	Mean.
	°	°	°
May—			
1894	59 (30th)	1.5 (6th)	42
1895	65 (31st)	22 (2d)	36.7
1896	60	—3.7	.....
1897	65	21.5	.....
June—			
1894	70 (30th)	32 (5th)	.....
1895	67 (25th)	34 (13th)	50
1896	78	30.9	51.6
1897	81	34 (6th)	.....
July—			
1895	73 (24th)	40	56
1896	70	35	53
1897	70	35	53
August—			
1898	61	31.3	.....
September—			
1894	64 (12th)	29 (19th)	.....

The snow covers the ground from the beginning of October until the end of May, and often reaches 4 feet in depth. There is usually a heavy fall of snow in the latter part of the winter. The summers are usually rainy, but the proportion of bright and cloudy days is difficult to state, for the reason that the seasons vary greatly. For instance, 1896 was cloudy and rain fell for forty days in succession, while 1897 has been so dry that vegetable gardens have had to be watered by hand.

The following table for the summer months was furnished me by the Roman Catholic missionaries at Koserefski, and shows the proportion of cloudy and bright days, also the rainfall. They also kindly furnished the preceding table on temperature at the same place:

Date.	Clear.	Fair.	Cloudy.	Rainy days.	Rainfall.	
					Total.	Mean.
May:						
1895	10	13	3	6	0.37	0.012
1896	11	10	9	1	.12	.004
1897	.....	.....	.....	.....	.....	.....
June:						
1895	4	20	9	9	.99	.033
1896	8	11	11	11	1.91	.057
1897	.....	.....	.....	.....	.....	.....
July:						
1895	7	14	10	11	2.19	.07
1896	1	5	25	17	2.63	.085
1897	.....	.....	.....	.....	.....	.....
August:						
1895	8	9	14	16	2.65	.085
1896	.....	.....	.....	.....	.....	.....
1897	.....	.....	.....	.....	.....	.....
September:						
1895	9	10	11	18	1.71	.057

In the above table some of the days being partly clear and partly cloudy have been counted twice, so that in several instances the total is more than a calendar month.

The soil of the Yukon Valley is a rich loam, formed from the falling leaves of the forests, with a sandy subsoil. Sometimes the river banks that have been cut down by the floods or ice will show alternate layers of muck and sand 15 feet thick. Owing to the frozen subsoil the roots of trees do not go down deep, but spread out along the ice and are therefore easily removed. If there is a thick layer of moss that also is usually removed in preparing land for cultivation. The land is then well spaded up and left exposed to the action of the sun. If stable manure is to be had, and is spaded into the soil, it greatly helps in the preparation. The second season a crop can be raised. The area for cultivation is greatly curtailed by the liability of the river bottom to annual inundations, but there is still a sufficiency of good land for the raising of all the hardy vegetables needed for the home market. The areas for pasturage are more extensive, but the climate, the eight to nine months of feeding under shelter, and the torment of the mosquitoes will probably prevent cattle raising. The pasturage for reindeer is practically limitless, and the raising of reindeer will yet be a large and profitable industry.

At Koserefski, 338 miles from the mouth of the river, and at Anvik, 358 miles, I found gardens kept by the Roman Catholic Mission at the former place and the Protestant Episcopal Mission at the latter place, in which were successfully grown the following vegetables: Potatoes, turnips, cauliflower, radishes, lettuce, cabbage, carrots, beets, and pease. I saw potatoes about 7 or 8 inches long and 3 inches in diameter, and turnips weighing 10 pounds. The surest crop is the early turnip, the early Flat Duck growing to over 10 pounds weight. Potatoes are of an inferior quality, being frequently watery. Pease propagate themselves. Radishes, lettuce, cabbages, cauliflower, and the Egyptian blood beet do well; carrots do well in some places; beans have so far been a failure. In a few of the places where vegetables have been tried, the cabbages have been kept frozen; the potatoes in the cellars under the houses; turnips, beets, and carrots have not kept well. In course of time improved root cellars will be constructed, which will secure much better results.

The Roman Catholic missionaries at Koserefski have tried to raise cattle, sheep, and goats. The native dogs killed the goats, and the sheep and cattle died. They are now making their second experiment with cattle. There is abundant grass, especially redtop, both for pasture and cutting, but the uncertainty of good weather for curing hay makes it difficult to secure it in sufficient quantities. This, however, could be remedied by the introduction of silos. However, another and almost insuperable difficulty in making hay is the plague of mosquitoes, which makes the life of the haymaker almost unbearable.

After all, the animal which God has created for this region is the reindeer. He is native to it, and consequently thrives where other animals are kept in existence only by the utmost care.

Since the coming of miners into this region, their willingness to pay high prices for fresh vegetables will probably in the next few years give a marked impetus to gardening.

The Episcopal missionaries at Anvik and Fort Adams and the Roman Catholic missionaries at Koserefski have made collections of grasses, fruits, and vegetables, which I have forwarded to the Department of Agriculture.

THE UPPER YUKON DISTRICT.

The conditions are very similar to those existing in the middle Yukon, with the increased severity of the winters, due to the higher elevation and greater distance from the sea.

The plants characteristic of this region are such as would grow in a low, marshy, country having spells of extremely hot weather during the three months when the ground is free of snow. Several varieties of moss, coarse rank grasses and rushes, low berry bushes, willow, juniper, and alder bushes, fir, birch, and poplar trees are found. The edible roots are the wild parsnip and rhubarb, both used only by the Indians. The wild berries are the high and low bush cranberry, blueberry, salmon berry, raspberry, currant, salal-berry, and rosebuds, the two last named being used only by the Indians. With the exception of the high-bush cranberry and the blueberry, the others are not plentiful, but are eagerly sought for by both whites and Indians. Jellies and preserves are made from them, and the cranberries keep well when frozen.

Bunch grass, swamp grass, wild pease, goose grass, and a few kinds of wild grains, timothy, rye, etc., are suitable for forage. There is also a great abundance of reindeer moss.

The ground is not bare of snow until June 1. Hard frosts usually come during the last week of August, the ground being frozen hard by September 15. The months of December, January, and February average about 30° below zero, the temperature falling as low as 75° and 80° in an ordinary winter. March, April, and May average about zero; June, July, and August average about 65° above zero, June being the warmest month, when 96° in the sun is common; September, October, and November average about zero.

The rainfall and snowfall are light, an average year having about 2½ feet of snow and 2½ inches of rain. During the three summer months about three-fifths of the days are bright, June being almost entirely cloudless.

The general nature of the soil is peat and clay, a mass of black dirt mixed with decayed vegetable matter, moss, and roots, to a depth of from 18 inches to 2½ feet, when solid blue ice is found extending down,

no one knows how far. Sometimes a layer of yellow clay is found between the ice and dirt. The ice is too near the surface of the ground for vegetables and grains to grow, unless deep trenches, very close together, are dug, thus draining the ground as the heat of the sun penetrates it. Even were this plan practicable, the results would hardly warrant the great expense of time, labor, and money required. The ground does not thaw out more than a foot below the surface, in spite of the long and hot summer days. Eight miles from Circle City, back in the foothills along Birch Creek, is a large, sandy tract of ground where some man has an experimental garden this year, and it could not turn out better than it has, so far. No ice is met, and the earth seems to be warm. The potato vines are large, and already in blossom, having been planted but fifty days. The garden truck sent to Circle City so far, is first-class.

At Fort Cudahy, 1,522 miles from the mouth of the river, on the edge of the Canadian boundary, I found a good garden kept by the N. A. T. and T. Company. Pease, beans, beets, radishes, lettuce, and cabbage seemed to be thriving in the garden, which was planted in May. At Circle City, and perhaps other places, lettuce, radishes, onions, turnips, and pease for early use are sown on the roofs of the houses, the log cabins being covered with dirt roofs, and the warmth of the houses probably conveying heat to the soil on the roofs. Six miles below Circle City Mr. R. Wilson, who furnishes cordwood for the steamers, is accustomed, when an opening is made in the woods sufficiently large to let the sun reach the ground, to loosen the soil between the roots and stumps and sow turnip seed. In 1896 he marketed 3,000 pounds of turnips, receiving 15 cents a pound for the same.

A large vegetable garden has been established on the Canadian side opposite Dawson, the capital of the Klondike mining region.

Mr. Jack McQueston, an old-time fur trader at Forty Mile Creek, prepared some ground, plowing it with a team of dogs. Afterwards he trained a pair of young moose to the harness and plowed with them. He succeeded well with the vegetables already enumerated as being raised at other places.

At Fort Selkirk Mr. Harper, another of the old fur traders, raised good potatoes by irrigation, as well as cabbage, beets, parsnips, and carrots. Barley matured well; oats and wheat only tolerably well. From a small keg of potatoes for seed Mr. Harper raised 1,900 pounds, many of the potatoes being too large for a single meal.

The only domestic animals in this district are the cats, which scare away the mice, and the dogs, which do the drawing and packing. A few horses have been tried at the mines, but have not done well.

The possibility of raising vegetables has been proven, and the high prices at the mines will, no doubt, greatly stimulate their production.

For the facts concerning the Upper Yukon district I am largely indebted to Miss Anna Fulcomer, teacher at Circle City. She also gathered the botanical specimens that have been sent to the Department of Agriculture.

To sum up the matter, it has been proved that potatoes, rutabagas, turnips, radishes, lettuce, cabbage, pease, cauliflower, carrots, beets, rhubarb, barley, and the smaller fruits, such as currants, cranberries, raspberries, huckleberries, blackberries, strawberries, and other varieties, can and are being raised successfully in the Yukon Valley.

With the establishment of an experimental station and the patient, intelligent testing of other vegetables, I have no doubt that the above list could be largely increased. With the high prices prevailing at the mines, vegetable farms should prove very remunerative in spite of the disadvantages of the country and climate.

Mr. William Ogilvie, who is connected with the land survey of the Dominion of Canada and has spent many months in the Upper Yukon Valley, estimated that there are 460,000 acres of land along the Yukon and its tributaries that can be made available for agriculture.

It is not probable, however, that it will prove a profitable country for cattle, horses, and sheep. The winter climate is so rigorous that they will require warm housing and feeding for eight or nine months of the year. In summer the mosquitoes so worry the animals that they receive no benefit from the abundant pasturage. Last winter some of the horses that were taken into the Klondike, when traveling, had to be kept in a tent at night, with a good fire. When turned out to graze, the torment of the mosquitoes reduced them to skin and bone.

The only two domestic animals that are native to the country and can live upon its products are dogs and reindeer. The dogs require the catching and preparing of fish for their maintenance, while the reindeer thrives on the moss, which is abundant over large areas of Alaska.

All of which is respectfully submitted.

Very truly, your obedient servant,

SHELDON JACKSON,
Special Agent, etc.

Hon. W. T. HARRIS,
Commissioner of Education.

LAPP MOTHER AND HER BABE.

V. C. GAMBELL, WIFE AND CHILD.

While returning to their school at Saint Lawrence Island, Alaska, they were lost at sea by the sinking of the schooner Jane Grey, May 22, 1898.

ERNEST L. WEBER AND FAMILY.

While returning to their school on the Kuskokwim River, Alaska, the parents and middle child were lost at sea off the coast of Nunivak Island, between June 27 and 30, 1898.

NOTES WITH REGARD TO THE ST. LAWRENCE ISLAND ESKIMO.

By V. C. Gambell.

ORIGIN.

There is no tradition that they crossed from Siberia. In ancient times they used only small kayaks, and they had no intercourse with that side.

LANGUAGE.

Similar to that of Indian Point and Plover Bay, Siberia, though it differs in some respects. Very guttural, and has a number of sounds not in the English.

VILLAGES.

This village, Sē vōō kŭk, and one near the southwest extremity, on the south side, Pōw'ōēlŭk, are at present the only ones. The former has about 330 inhabitants in 32 houses and the latter 35 in 6. In July they scatter along the eastern shore of the island and return to the villages in September, though there are two families who do not return till much later from a lagoon 15 miles east of here.

HOUSES.

The houses vary from oval to nearly round in shape. They are built of pieces of wreckage and driftwood about 6 feet long, placed on end in a shallow trench in the ground and fastened to a pole at the top. Two posts, 6 to 10 feet apart and 15 to 18 feet high, support a ridge piece, which in turn supports a series of rafters about 1 by 3 inches and long enough to reach from the edge of the wall to 2 to 4 feet past the ridge piece. The rafters are about 2 feet apart at the walls and are supported in the middle by a row of upright pieces. Walrus skins are placed over these and carefully tied with rawhide ropes and weighted with rock, iron wreckage, etc. Sod is put over the edges of the skins to exclude the snow. The peak of the roof is nearer the west than the east end. The door is on the west end, as all the hard winds are from an easterly direction—mostly northeast. The living room is at the east end, 7 feet wide and from 10 to 30 feet long, depending on the number living in it. It is made of heavy deer-skins sewed together on the top and sides, with a walrus-skin floor.

The front edge is not fastened at the bottom, which allows it to be used as a door. It is heated by means of seal-oil lamps and ventilated by an opening in front, near the top, 4 to 5 inches in diameter. Other rooms partitioned off by means of walrus skins are used to store meat, boxes, etc. Hunting gear is stacked in the main inclosed part. They lived, till thirty years ago, in underground houses, some of which have been built over, to be used as storehouses for their meat. The walrus-skin cover is taken off and during July and August used in constructing a summer tent.

CLOTHING.

Their clothing is made of deerskin, which they get from Siberia, seal skin, bird skin, and dogskin, and rain coats made from the intestines and stomachs of the seal and walrus. They use a great deal of calico to make an outside coat to protect their clothing from snow and dirt. They are very fond of woolen underclothing and mittens.

FOOD.

Their food consists principally of seal, walrus, and whale meat. They get but few fish, small catfish, and cod, in August and September, when the sea is not too rough. The village near the southwest extremity gets salmon in a lagoon near there. In the winter they get crabs, which, in case seals are very scarce, form an important addition to their larder. They get few berries, but gather large quantities of a short, fleshy herb, a stone crop, something like the old-fashioned garden live-for-ever. Ducks and other sea birds also form a large part of their food from June till September. They are very fond of flour, hard bread, and molasses, which they procure from the ships.

TOBACCO, ETC.

Tobacco is used by all. Few smoke; those who do, draw the smoke into their lungs and cough it out. It is usually held in the cheek and the saliva swallowed. When not in use, a plug of chewing tobacco is carried behind the ear. Rum is used by all who can get it. They have learned to make an intoxicating liquor here during the past year. They take flour alone, molasses alone, or mix them in the proportion of 5 to 3, allowing them to ferment five days, and then distill. Five quarts of flour and 3 of molasses make about a quart of liquor.

HUNTING GEAR.

Of native make they use the harpoon, poke, and canoe. They have breech-loading rifles and whaling gear. They handle a whaleboat well, but prefer to use paddles or short, light oars. They are poor marksmen and won't attack a whale unless there are several boats at hand, and if they have any choice will always strike a small whale. Sea quail and sea pigeons (small puffin?) they catch in nets like huge butterfly nets with handles 15 feet long.

CUSTOMS—MARRIAGE.

Several men have two wives, though the women all seem opposed to it. Some have an old and a young wife, but some are near the same age, both young or both old. Children are selected for each other as young as 8 or 10 years of age. However, they often change before they are married, and even after they have been married a year, or even after several years and children have been born, wives are exchanged. Such apparently are as good as anyone in the community, though the others talk about it.

BIRTH.

Good care is taken of a woman at the birth of a child. Labor is easy. The child is born while the mother is on her hands and knees. The mother soon sits up, but keeps the same place five days, then goes outside and works the same as any other woman. One woman has seven children alive, five and six are not uncommon, and three or four is a fair average.

DEATHS.

Formerly the dead were interred near the houses. Later they were placed in a cave or old house, of which there are three or more now partly filled with bones. Now when a death occurs the body is wrapped in deer skins, a pole a little longer than the body is placed lengthwise on top and all wrapped up with thongs. Thongs about 4 feet long are tied on and serve as handles, and from four to ten men drag it over the ground about a mile to a rocky bluff 600 feet high. Children are placed at the foot and important persons near the top, while those of low degree are stationed midway. Thongs, deerskins, clothing, etc., are cut and scattered around and the body left completely naked. Tobacco and hard bread are placed at the head. The ravens, foxes, and dogs soon tear the body to pieces.

RELIGION.

They have none. Some headless men with shark-like mouths made the mainland of Siberia. A big bird became seasick and vomited up the islands. Whales, seals, and bears are endowed with human attributes and are fed, given drink and tobacco when killed. Their fathers and grandfathers and any dead of near kin are fed about the 1st of July. A family goes near the bluff, makes a little fire, calls out the name of some relative and throws him a piece of meat. Some take a crowd along and feed everybody. The devil, or some devil, causes sickness. Some males claim to have some power over evil spirits, and to protect against sickness or the return of it when a person is convalescent. Departed spirits are said to return and sing and dance; numbers claim to have seen them. The spirits are always near where they were laid or where their skeleton is scattered, ready

to harm any one who touches their bones or anything which is left with them. Of other superstitions there is no end. From whaling to cutting hair, everything must be done in a regular way or evil consequences will follow. Some are as follows: A child must keep a close-fitting deerskin hood on its head for the first two years of its life, or its head will grow too large. A man must not cut his hair while his wife is pregnant or some harm will happen to her. If a stone is moved in winter, a storm will follow. If whaleskin is cooked, all whales will disappear. Neither will they come if any wood belonging to a dead person is burned. If anything hot is put on the snow, so as to make a steam, the walrus will keep away from the island.

AMUSEMENTS.

In the winter they dance and sing in nice weather. A man invites another and all his friends one day, who in turn with all his friends dances at the other man's house the next. At these meetings they trade. A man dances with a woman and gives her something, as a piece of calico. She in turn must dance with him, or her husband must dance with his wife and return something of equal value. On pleasant days the men run races, wrestle, jump, etc. In the summer they play ball, jump the rope, toss each other in walrus skins, etc.

DISEASES.

Nearly all are afflicted with skin diseases. Bleeding at the nose and lungs is very prevalent. Pulmonary diseases are nearly always fatal. When very sick, the patient is strangled. Little grief is shown at the death of anyone. Ringworm prevails.

CLEANLINESS.

Fur clothing is never washed and cloth seldom. In a warm room they are very offensive. They are infested with lice.

CHARACTER.

They have not the slightest regard for truth, and if caught in a lie are not the least bit ashamed. They steal anything they think will not be found out. They steal lumber, make boxes and bring them to be painted. They have come in the house when the door was left unlocked and taken canned goods, etc. They broke the lock to the storehouse one stormy night and took at least 1,000 primers. They are very friendly, always smiling, but always backbiting each other. "A man may smile and smile and be a villain" must have been spoken particularly of these islanders. That they are so bad may be because those who were not allowed to live at Indian Point or Plover Bay have come here. They have no regard for promises made.

RECOMMENDATIONS WITH REGARD TO THE DISPOSITION OF LAPPS AND REINDEER.

WAR DEPARTMENT, *Washington, March 3, 1898.*

SIR: In accordance with your request of yesterday that I should give you an approximate statement of cost of reindeer upon arrival at New York, and also suggestions as to their present disposal, I have the honor to report that:

First. The approximate cost per deer at New York is $68 (537 deer at $68 makes $36,516), sleds at $3.50 (418 sleds at $3.50 equals $1,463), and harness $3 (516 sets harness at $3 makes $1,533).

Second. As to what disposition to now make of them, in view of the fact that they are no longer needed to carry food to the Yukon Valley, permit me to suggest:

(*a*) That the 17 women and the 20 to 25 children of the party be left on Puget Sound, and in June be sent by sea via St. Michael to Yukon River.

(*b*) That the men, reindeer, sleds, and harness be taken through to Pyramid Harbor at the head of Lynn Canal, and from there, in charge of William A. Kjellmann, superintendent of Government reindeer stations in Alaska, be moved across the country along or in the general neighborhood of the Dalton trail, and then along the table-lands on the south side of the Yukon Valley to good grazing grounds in the neighborhood of the junction of the Yukon and Tanana rivers. Reaching that point the herd can be left until you determine what shall ultimately be done with them.

The herd at the mouth of the Tanana will then be in a central position for any exploring expeditions you may wish to make during the summer. Then if during the summer you establish a military post in the Yukon country, you will need a portion of the herd for the use of the commanding officer in the moving of troops on official work. Then if you conclude to sell a portion of them, the mail contractor would like the privilege of buying.

Again, if you should see it to be for the interest of the Government to establish a military mail service from a proposed military post in the Yukon Valley to the coast in the neighborhood of Prince William Sound, some reindeer will be needed for that service.

With regard to the drivers, I would suggest that a portion of them be retained for the use of the commanding officers as reindeer drivers in the movement of troops, another portion be turned over to the Department of the Interior for the use of the Bureau of Education, and, if a portion of the deer are sold to the mail contractor, that he be allowed to have a portion of the drivers for their care and use.

I have the honor to be, very respectfully, your obedient servant,

SHELDON JACKSON,

Special Agent for Purchase of Reindeer.

The honorable the SECRETARY OF WAR.

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SPECIAL REPORT

ON THE

MARKET FOR AMERICAN HORSES

IN

FOREIGN COUNTRIES.

DECEMBER 14, 1898.—Read, referred to the Committee on Agriculture and Forestry, and ordered to be printed.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1898.

To the Congress of the United States:

I transmit herewith for the information and use of the Congress a communication from the Secretary of Agriculture, which is accompanied by a report on the market for American horses in foreign countries.

WILLIAM MCKINLEY.

EXECUTIVE MANSION, *December 14, 1898.*

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D. C., December 12, 1898.

Mr. PRESIDENT:

I have the honor to transmit for your information and that of the Congress of the United States a report consisting of a number of communications on the subject of the demand for American horses in certain countries of Europe.

At the time of assuming office as Secretary of Agriculture I was already much impressed with the necessity of an output abroad for our surplus horse production. For some time previous extraordinarily low prices had prevailed for horses in this country, and horse breeders and horse raisers throughout the country were correspondingly depressed. It is quite possible that in this apparent cause for discouragement there really was a blessing in disguise, for it is probably due to these extremely low prices that the first impetus to the foreign demand for American horses was due. Whatever the cause, the figures which I have the honor to submit at the close of this communication will show that the export trade in American horses, hardly more than begun some five years ago, has advanced with rapid strides.

My first thought was that to develop this opening, which presented itself so opportunely to our much discouraged horse raisers, was a duty which this Department owed to them, and I was convinced that the most useful service it could render them was to gather from all available sources whatever information could be procured as to the character and extent of the demand existing abroad for horses of all kinds. Without such knowledge it was obvious that many unprofitable shipments would be made, and not only cause a loss to the shippers and consequent discouragement, but, by placing undesirable animals, undesirable at least from the European standpoint, in foreign markets, dissatisfaction among foreign buyers would be generated and opinions unfavorable to the American horses would result, thus perhaps seriously retarding the development of this export trade, if it did not altogether arrest it.

Actuated by this thought I endeavored to interest our representatives abroad and American citizens going abroad in the gathering of

information as to the extent of the demand in horse-importing countries, and as to the various kinds of horses wanted in those countries, and the distinguishing characteristics to which foreign buyers attach importance. As a result, a large number of communications have been received at this Department from a variety of sources, and I have, after some reflection, concluded that the best way to present this information to the public is to submit all these communications, in the form of a special report to you, for transmission to Congress with the recommendation that that honorable body should order the same printed for distribution to their constituents. As a convenience to the reader of this report, I present here a summary of the information collected by these various correspondents, but as each one pursued his own investigations independently and presented such facts as he was able to gather, often accompanying them with a statement of his impressions on the subject, I have deemed it best to present each communication in full, eliminating nothing save in the case of a few correspondents who added other matter not strictly pertinent to the subject of this report, viz, the demand for American horses in European countries. Following the summary already referred to, I present some tables showing the number and value of horses exported from this country to Europe during the past five years. These figures are amply sufficient to satisfy everyone who studies them that a demand exists in Europe, which should not only afford encouragement to American horse raisers, but should convince them that it is well worth their while to study closely the character of this demand in order that they may be prepared to meet it. I can not reiterate too strongly my conviction that in this, as in all the other branches of our export trade, the needs, the tastes, and even the fancies of the foreign consumers must be carefully studied, and every effort should be made by American producers to meet them. There is little doubt that we can raise as good horses and raise them as cheaply in this country as in any European country, and far more cheaply than in those countries that are obliged to import horses to satisfy their own requirements.

Another point deserves attention. It is of paramount importance that no diseased animals should by any chance be landed in foreign ports from these shores. Under the present law the authority to inspect horses for export is vested in this Department, and the Chief of the Bureau of Animal Industry has already taken the necessary steps to establish a proper system of inspection. Not only is this precaution due to the foreign buyers who seek to enlarge their trade relations with us, but it is also due to our reputation. In these days, moreover, when producers in many countries seem animated by a determination to obstruct by every means available to them the imports into their own country of American products, it becomes an absolute necessity for us,

if we are to successfully develop an export trade for any of our products, to be prepared to guarantee their wholesomeness, soundness, and perfect freedom from every sort of contagion.

Should Congress conclude, in accordance with my earnest recommendation, to publish this report for general distribution, I have the honor to request that not less than 20,000 copies be placed at the disposal of the Secretary of Agriculture for distribution through this Department.

I have the honor to remain, respectfully,

JAMES WILSON,
Secretary.

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SPECIAL REPORT ON THE MARKET FOR AMERICAN HORSES IN FOREIGN COUNTRIES.

RÉSUMÉ OF INDIVIDUAL REPORTS

INTRODUCTORY.

The American export trade in horses has made great strides within the past five years. In fact, its beginnings were laid only during the Chicago International Exposition of 1893. During the next year there were only five foreign buyers on the Chicago market and only 2,000 horses exported from that city—twice as many as had been sent in an experimental way the previous year—while in 1897 there were seventy foreign buyers, and three-fourths of the horses exported to Europe went directly from that market.

The European nations, with the exception of Hungary and Russia, do not produce as many horses as they need, and of late years have drawn largely upon America, particularly Canada and the United States, to supply the deficiency.

This condition of affairs is due largely to the thickly populated state of the countries, which also operates to prevent the production of sufficient cereal and other food stuffs, creating a market for many of our agricultural products; but partly to the large number of horses which are required by their armies and for the better part of their lives are entirely removed from productive work.

Much that has been published regarding the kind of horse needed for the export trade would lead one to believe that European horses are entirely different from those raised on this side of the Atlantic, and that they are bred according to a definite formula: Just so long, so high, and so thick, balancing the scales at just so many pounds—an ideal horse that America never has grown and never can produce.

The truth is, American horse raisers have just as good stock as that of their fellow-breeders on the other side, where good, indifferent, and inferior horses of draft, coach, and other breeds are produced the same as in this country.

But when horses are selected for shipment 5,000 miles by rail and sea, reason dictates a choice of those individuals, the best of their kind, which will command a price sufficient to pay purchase money, transportation expenses, and a profit. Besides, European countries doubtless produce a sufficiently large number of inferior horses for

their own use, and the demand is only for such animals as are the best of their class. There appears, however, to be an exception to this in the case of Denmark, which imported, in 1896, somewhat over 6,000 horses, mostly from Russia and Finland, valued at $80 per head, and exported nearly 16,000, valued at $172 per head.

That the larger part of the horses offered for sale in the principal horse market of the United States are not to be rated as first-class is shown in a report* of a Government inspector at the Chicago stock yards, who writes:

> There were sold from this market in 1896 86,506 horses, 80 per cent of which I find, by reference to the daily sale sheets, were plugs and common horses, leaving in round numbers about 18,000 desirable horses, 60 per cent of these being purchased by foreign buyers. During the first six months of the present year (1897) 52,436 have been sold, and less than 25 per cent are of the classification I have previously mentioned as being available for exportation, and practically all of these have been purchased for that purpose. The extent of business at present being done, and its susceptibility of increase, is limited only by the number of desirable horses that can be obtained. Country buyers and shippers report a scarcity of desirable animals of the type mentioned.

Europe wants good horses of all breeds, just as America does, but there are some conditions which are not the same. Therefore, a good horse which would be just the thing for the purpose of the buyer in America might be unsuited to the work of the prospective European purchaser; and the reverse is also equally true. As the foreign demand is the "life of the trade," taking off the market a large number of horses and thus increasing the value of those that remain, as shown by the large increase in the price of horses since this outlet was created, it is good policy for horse breeders to study the taste and desires of this large number of purchasers and endeavor to produce as many horses as possible that comply with these demands.

THE ARMY HORSE.

Besides the usual demand for horses for draft, carriage, and other business purposes of civil life, common to this country and Europe, in the latter there is a considerable annual requirement for horses to remount the cavalry and haul the artillery and baggage trains of their large armies.

While written descriptions of the horses required for the United States Army and those of the European armies are practically the same, nevertheless the animals themselves differ materially in many important particulars, according to the different needs and ideas of the countries. Our horses are weight carriers, with large barrels to stand hard work and to become hustlers when forage gives out. The European horses receive more careful treatment, have much smaller barrels, and are more lightly and gracefully built. Ours may be the more serviceable, but if we desire to sell we must cater to the taste and idea of the purchaser. It pays to do so.

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*See Appendix, p. 87.

It must not be supposed that trans-Atlantic nations (certainly not France and Germany) are looking to this or any other country to supply them with army horses in time of peace; on the contrary, their policy is to encourage and develop horse breeding at home, so that there may be no need to look elsewhere even in time of war for the necessary horseflesh to mount their cavalry, draw their artillery, or move baggage trains. Nor do these Governments send agents over here to buy horses for their armies. The foreign buyers actually here are simply horse dealers who buy what they believe they can dispose of with profit to themselves. Nevertheless, there is no law, rule, or regulation which interferes with the sale of American horses for military uses, in any European country.

The general outline of methods of purchasing horses for the army is the same in both France and Germany, two of the largest users of army horses. A remount commission, consisting of officers and a veterinarian, have full powers and discretion, limited only to the designated number of horses and to the average price per capita to be paid.

These boards sit at stipulated times and places, and all those having horses to offer are free to bring the same for inspection. The officers decide what price they will offer for each individual horse, subject to a satisfactory report from the veterinarian, and the owner can refuse or accept, as he sees fit, and on acceptance the sum agreed upon is paid in cash to the owner.

There are six of these remount commissions in Germany, three of them buying in eastern Prussia most of the cavalry horses, and the other three paying more attention to draft animals for artillery and baggage trains, purchasing something over 10,000 horses annually in north Prussia. In France the number of horses purchased may be slightly more or less than 10,000, but definite information as to that is not at hand.

The cavalry of those two nations is divided into classes, which in each country are very similarly mounted. For instance, in Germany the minimum height for light dragoons and hussars is 14 hands; for uhlans, dragoons, and hussars of the guard the minimum height is 14½ hands, and for cuirassiers the minimum height is 15 hands; while in France the minimum height for light cavalry is about 15⅛ hands; minimum height for dragoons between 15¼ and 15½ hands, and for cuirassiers between 15¾ and 16 hands.

All these must be over 3 and under 5 years old, sound and gentle. The first class must weigh from 775 to 880 pounds; the second class, 880 to 1,000 pounds, and the third class, 1,050 to 1,150 pounds. The artillery and baggage-train horse is required to be about 14½ hands high in Germany, weighing 900 to 1,050 pounds, and 15½ hands high in France, weighing 990 to 1,100 pounds.

Horses to be accepted in the army service must of course be perfectly sound and not vicious, of solid dark colors, without prominent

marks. A well-bred, low, short, thick-set horse, with strong flanks, good high tail, buttocks full and square, ribs rounded out so as to "furnish" well, well-shaped legs with plenty of bone, and good feet, is about the thing desired. Most of the German cavalry horses are bought in eastern Prussia, where horse breeding flourishes, and the breed is generally known as Trakehnen. This breed originated from native mares crossed with Russian horses. In the course of this century, and especially for the past twenty-five years, top crossing with English thoroughbred stallions has been practiced, and the race has been much improved both as to speed and endurance, and produces excellent cavalry horses.

France has tried many kinds of horses for her army—Arabian, South American, and Spanish—but most of her remounts for light cavalry come from southern France, where the horses are a cross from Spanish Arabian (probably barb) stallions upon the native stock. As a large number of the 9,017 stallions used in France in the season of 1897 were thoroughbreds and over one-third at least half English thoroughbred, Anglo-Arabian, or Arabian, there is no lack of material for first-class horses for the heavy cavalry, dragoons, cuirassiers, etc., and to compete successfully in that market none but the best horses need be entered.

Doubtless, numbers of American horses do find their way into the French and German armies, ofttimes perhaps under the name of English or Irish, their naturalization being completed during the few days elapsing between their trans-Atlantic journey and reembarking for the trip across the channel.

Prices vary, $180 to $260 being received for suitable horses in France, while in Germany the price depends on the government to which the horse is sold, $210 being paid in Prussia (i. e., the total price paid for all horses purchased for the Prussian army divided by the number purchased must give a quotient not greater than 830 marks), and $290 in Bavaria.

Denmark remounts her cavalry with horses principally drawn from Germany and England, but uses native horses entirely for artillery and baggage trains, her purchases, however, being trifling in number.

In Belgium a few dealers furnish the small number of horses required, and those for the cavalry are usually recruited in Ireland (misfit hunters), and as the business as now conducted has proved profitable (about $60 net profit on each horse) there is not likely to be much of a demand from them for American-grown stock. The artillery horses are supplied from among the home-grown horses.

Some American horses are in the English artillery service, but none in the cavalry. It requires about 2,000 horses annually to remount the English cavalry, etc., and from 4 to 5 per cent (80 to 100) of these are Canadian. The principal fault found by the inspector of remounts of England with American-raised horses is with their shape—

too long in the body, tail too low down on the body, the hips wider than the buttocks, the back curving in, and leg deficient in bone. The English war office would be glad to buy short, low horses, thick-set, with strong flanks, good high-set tail, muscular buttocks and thighs, ribs well rounded out so as to "furnish" well, and well-shaped legs, especially if they possessed rather more stamina than is accredited to the average American horse shipped to the English market.

HORSES FOR BUSINESS PURPOSES.

Of the 28,000 horses exported from the United States in 1897 about 4,000 were exported to Belgium, 1,000 to France, Germany, and Holland, and 20,000 to Great Britain. It is evident from this that the business is already pretty well established in Great Britain. This trade should be upheld and fostered while efforts are being made to gain entrance or establish a firm foothold in other countries. The most important and effective efforts to advance this trade must be made by the horse breeders of the United States by a systematic attempt to produce such horses as those markets demand, for if the particular kinds of horses desired are not to be had no amount of energy or push on the part of dealers can increase or even maintain the present export figures.

Of course, much may be done to improve the condition of the horses on arrival in Europe, by securing improved and proper accommodations on board the steamers carrying the animals, and the establishment of an inspection at the port of shipment similar to that employed with cattle, so that no horse affected with any disease, contagious or otherwise, shall be allowed to depart from our shores to injure the reputation of our stock. About 750,000 horses are in daily use in London, their average term of usefulness, depending upon the nature of their employment, being from three to seven years; thus on an average of five years' service, 150,000 new horses annually are required for the London business world. When it is recalled that only about 100,000 horses pass through our largest horse market (Chicago) each year, this London demand is seen in its proportionate importance. Of these 150,000 horses used in London, and the still larger number in the rest of the island, 40,677 were imported during 1896, Canada and the United States furnishing 29,782 of them.

It takes some time for the imported horse to recover from the effects of the sea voyage, and doubtless prices would be higher if that time were allowed to elapse before the horses were put up for sale. There would, however, be some expense attached to it, the buyers considering an addition of £2 (about $10) to the price of the horse a fair estimate of the expense required to get him in condition for work.

The Belgian commissioner, who recently visited this country to investigate the raising of horses in the principal centers of horse

breeding, and to report on that industry in its relation to commerce with the Continent, says:*

The American horse undergoes at his landing in Belgium [or any other country] the same disadvantage of acclimation which our Belgian horse meets on arrival in the United States.

It is scarcely reasonable to expect from an animal which has just made a voyage a sum of work which is exacted of a native horse. This is what some persons have not understood who complain of a lack of vigor in the horse which they bought the day before, and of which they expect immediate service. As soon as the animal is recovered we may expect from him if placed in the same conditions as any other horse, the same sum of service, if not a greater.

In London the tramways, bus companies, jobmasters, and owners of light delivery wagons are large purchasers of American horses. Horses for their use must be from 15¼ to 16 hands high, weigh from 1,200 to 1,350 pounds, be compactly built, with plenty of bone and muscle and good action, and average from 5 to 7 years of age. They should measure from 76 to 78 inches in girth, and from 8½ to 9½ inches around the leg just below the knee. Such horses will sell from $170 to $185, and sometimes as high as $200.

Large bus horses for suburban work, 5 to 8 years old, 16 hands high, weighing 1,600 to 1,700 pounds, with a girth of 88 inches, bring from $185 to $225, and exceptional native horses sell as high as $400. The "trotting vanner," a synonym for useful light delivery-wagon horse, 16 to 16½ hands, 78 inches at girth, and 7½ inches around the leg just below the knee, sells for $125 to $150.

Carriage horses, 90 inches at girth and 9½ inches around the leg just below the knee, with good knee action and well bred, will, if well matched, bring from $750 to $1,500 per pair.

For heavy draft horses the demand is always brisk, and Clydesdale and Shire horses are reported most in demand. Solid, stocky, 16½-hand, 1,750-pound horses, free from blemish, 5 to 7 years old, 10 to 10½ inches around the leg below the knee, and 98 to 100 inches girth bring from $250 to $375.

Misfits, scrubs, and badly broken horses will not do; but a young, good, sound, well-broken horse, with plenty of bone and muscle, compactly built, of almost any recognized class or type will sell well in the London market.

The effect of the American trade has been to cheapen horses in England, and horse breeding among farmers on the island is nearly paralyzed. With horses a drug upon our market, it was undoubtedly good policy to sell our stock in Europe, even at exceptionally low prices. But the price at home is looking up. To come out of the business with a profit it is necessary to get better prices abroad than formerly, and to do this only the proper kind of horse must be offered.

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* Importation de chevaux Americains: Rapport présenté. Par M. Albert Von Schelle. Bruxelles, 1898.

Germany, Holland, Belgium, and France each sends to England good draft horses. France also exports to Great Britain a large number of good carriage horses. It is with the horse breeders of these countries, as well as of the United Kingdom that America is compelled to compete.

Belgium sells a great number of draft horses in Germany, and the horse breeders of Belgium are more concerned at the importation of American horses into Germany than about the few which find sale to Belgian buyers, although the danger to the purity of the breed from these latter is viewed with alarm. Mr. Von Schelle, quoted above, says on this subject:

As to draft horses, the importation of American horses ought to be watched in two directions—in the matter of breeding, for anything that would produce lack of discrimination in breeding. There is room for study of the make-up of imports as to kinds and sexes, and to see if American draft mares are brought here in sufficient numbers to lower the breed. I have already shown that farmers demand in preference mares from Hungary. As to the draft horses, the farm horse, the production of which constitutes the most flourishing branch of our breeding and the exportation of which has been a source of profits which sustain our agriculture, that kind takes above all the road to Germany, and the growing importation of American horses in that country would easily effect the diminution of our exports. There, according to my information, is to be found a great danger from a commercial standpoint, for a fall in price is to be feared.

In lowering the market value of our draft horses by competition of native with imported animals, the importation of American horses constitutes a menace to the breeding of Belgian draft horses.

In another place Mr. Von Schelle remarks:

The growing figures for our exports to Germany, France, the Grand Duchy, Holland, and Switzerland contain without doubt a certain number of American horses landed at Anvers, but which are only passing through Belgium.

The single cab and private brougham horses are kept by the better class of stables for the use of persons who are willing to pay more than the ordinary cab fares for a "turn-out" which has every appearance of being a private carriage, or one owned by gentlemen for their own use. The horse to answer these requirements must have more style and finish than the bus horse. The more style and action he possesses, with sufficient quality and size, the more nearly will he approach the desired standard, until he passes by insensible shades into the fine, high-class carriage horse.

Color is not considered in a lower class horse, unless perhaps in the case of a very bad gray, as purchasers of this class usually go on the theory that one color is as good as another, but as we approach more nearly the high carriage class, there are several points to consider, including that of color, which have an important effect on the price of high-class horses.

It is only by the infusion of draft blood that the size of our horses can be increased, and while this is desirable there is danger that it will also tend to make them too coarse. Care must be given to the

production of size with a little smoother form. If we succeed in this the horse will advance beyond the bus-horse class until he becomes an excellent general-purpose horse, of which there is at the present time a great scarcity. This horse in England will be used by men of moderate means who can only afford to keep one horse, and therefore want one suitable for the brougham, the cart, and at the same time moderately well fitted for the saddle, besides being of such general utility that he can always be sold at a fair price. This horse would also prove to be a good cavalry horse, and is one which American breeders are to-day prepared to raise to better advantage than any other. His legs and feet must be well formed and free from blemish and he should stand right on them, his shoulders and hips good, and his back short. Such a horse is always in demand and, if 16 hands high, sells for a good price, even if he has but ordinary action. He is a good "all-round horse," and his price in England is regulated, within reasonable bounds, almost entirely by his qualifications.

Inferior horses can be sold, but at what price? The horses of Russia and Finland sell in London at an average of $80 per head. A victory in that competition would be a financial defeat. The average value of horses imported into Great Britain from the United States in 1896 was only about $150 at port of shipment. This must include many very ordinary individuals, which perhaps should never have left their native pastures, but remaining at home, have done any labor for which they are suited, and not by their introduction abroad have brought discredit upon our truly superior stock, whose qualities have but to be known to be appreciated, and which alone should be offered in foreign markets.

Most of the exportations have been light horses, but the heavier horse is now receiving much attention; bus horses, cart and draft horses, are being shipped and are bringing good prices in competition with the horses of the same class in the old and original home of the breed. This of course arouses opposition from the foreign breeders of draft horses, who, when the imports from America were of a character not calculated to compete with their horses, viewed American prominence in the trade in saddle, light, and fancy driving horses with much more equanimity than now, when their purse and pride are both assailed by the entrance of the American-grown draft horse upon their hitherto undisputed territory. Therefore, we may expect to meet with all kinds of opposition on the continent, where the arm of the Government will doubtless be invoked in aid of the horse breeders. That we may be met with higher tariff rates, oppressive veterinarian regulations, and perhaps complete prohibition, experience leads us to expect. The following extract from an article printed in the Journal de la Société Agricole du Brabant, December 6, 1897, and transmitted by United States Consul Roosevelt, at Brussels, to

the State Department, indicates the present feeling of the foreign horse breeders upon the subject, and is of interest to exporters and breeders of horses in the United States:

La Fédération Nationale de l'Elevage du Cheval en Belgique (National Association for Horse Breeding in Belgium) convened the 4th of November, 1897, in a meeting at which all the breeders assembled to discuss the influence which may be exercised upon our indigenous production by the constantly increasing importation of American horses. On December 1, 1897, the Société Centrale d'Agriculture (Central Agricultural Society) also held a meeting to discuss the same subject.

Some few years ago the danger was pointed out in an article which appeared in l'Independence of the 21st of December, 1897. Three months ago a Belgian military review published an article on the subject. In 1894, at a general assembly of the Société Nationale des Eleveurs Belges (National Society of Belgian Breeders), attention was again called to the peril which menaced us, and then for the first time horse breeders were warned that the production of draft horses might suffer by competition from the New World. Since then they have reposed in a deceitful security, and now find themselves confronted by the progress realized in the the American ranches.

The first shipments were of inferior quality, the experimenters having been timid. These importations from North America must not be confounded with an enterprise which breeders in the Argentine Republic had unsuccessfully tried some years before. The wild horses known as "pampas" left a sad souvenir, still remembered by many persons. Such a mistake would do great injustice to the American horse, whose hitherto disputed qualities are to-day fully appreciated at their just value. It can not be otherwise, since the Americans have been indefatigable for years in securing the finest breed of animals from the most perfect European races, which they have taken to their country. Their efforts have been crowned with full success. From latest statistics it is shown that there are now in the great Republic between 14,000,000 and 16,000,000 head of horses. It is well to note in passing that these figures do not include the equine population of Canada, which, although not of such considerable number, is, however, of much importance. On account of a concurrence of exceptional circumstances a crisis was produced in the United States in 1894. The rigors of a glacial winter and the insufficiency of forage greatly reduced the number of horses. Besides other causes—such as the adoption of the bicycle, replacing animal traction by electricity, and automobile motors—the unfortunate economical situation provoked a considerable decrease in the value of horses. This situation aroused the spirit of enterprise of this nation, essentially traders, and caused them to look around for an outlet for their over-supply. The port of Antwerp was one of the first to attract the attention of speculators, and at the present moment several establishments in that city are engaged in selling at private and public sales the cargoes of American horses arriving regularly every week.

During the ten months ended October 31, 1897, 4,440 American horses were sold in our metropolis, and it may be stated that this number does not include horses of the above origin coming into Belgium by way of England or by trans-Atlantic vessels calling into port.

The danger signal was until now particularly directed against fine horses (carriage and saddle horses), but we now see post horses, cart and draft horses (bus, train, and heavy wagon), for which the demand was usually addressed to our Ardennes dealers. More than this, and a fact that should attract the attention of our horse breeders, each cargo of horses includes a certain number of draft horses, which bring the highest prices, a detail particularly remarked upon by

those attending the regular sales. Our draft horses are to-day of great value, due to an intelligent selection. Our indigenous race is the most ancient, the best traced, the type and characteristics of which are most faithfully reproduced. A few farmers have bought at Antwerp draft mares sired by stallions imported into America, belonging to Percheron, Boullonnais, Shire, and Clydesdale races. The mares have to our knowledge been presented to Belgian stallions, and the crossing thus obtained has been sold as indigenous, to the great injury of the reputation and purity of our race.

Moved by this condition of affairs, affecting the only prosperous branch of agriculture, all the Belgian societies having at heart the question of horse breeding have united to combat the danger, and by the most authorized means have agreed to make their conclusions unanimously predominate. The Fédération Nationale de l'Elevage du Cheval en Belgique (National Association for Horse Breeding in Belgium), which took the initiative in this campaign, the Société Centrale d'Agriculture (Central Agricultural Society), the Société Nationale des Eleveurs Belges (National Society of Belgian Breeders), and the Société Royale Hippique (Royal Equestrian Society) have made application to the minister of agriculture that he will, without delay, confide to the delegates chosen by the societies the official mission to make a study in the United States and Canada, so as to acquire a full knowledge as to the equine population in the two countries and to make it the object of a detailed report. At the same time there will be made in Belgium and other foreign countries—that is to say, in centers of demand, as well as in breeding localities—investigations to make known the situation and to find new markets for our equine production. Thus the Government will be able by the spring of 1898 to take such measures as the protection and interests of breeding may dictate.

The following clipping from the Hamburgischer Correspondent, a German paper, indicates a line of attack upon our horse similar to that made upon the other agricultural products of the United States which come in competition with German agrarian productions:

IMPORTATION OF HORSES INTO GERMANY.

HALLE, *February 4, 1898.*

Public economy councillor Dr. von Mendel-Steinfels, reports the importation of horses to be a serious matter, and that the number brought from Russia is annually 30,000, while from Denmark, Holland, France, Belgium, and other countries it is 46,000.

But the most dangerous importations are from America, inasmuch as there the worst veterinary management imaginable exists. There is therefore great risk of importing disease through this American importation, and it is with the greatest satisfaction that the Government has been found ready to take stringent measures for limiting this evil and has given assurance that most especial watchful care will be given to this matter.

This importing of animals has serious meaning, not only in the direction of prices upon our markets, but also in the danger of admitting diseases, and it is of most pressing importance that measures for the regulation of this trade be established immediately.

To this end it will be necessary to extend the quarantine at Hamburg to four weeks.

That the American horse breeders have for years been importing the finest individual animals of the best breeds from the most perfect European races is clearly proven by the studbooks of the old country,

where the phrase "sold for export to America" is of frequent recurrence, often with the name and residence of the purchaser added. Shires, Clydesdales, Belgian Draft, Percheron, Oldenburgs, Cleveland Bays, and Hackneys, etc., have all figured in the list of importations, and the efforts of American breeders to produce fine pure-blood horses of these breeds have been crowned with success, while the crossing of these stallions upon the large "native mares" has produced a number of large, heavy, showy horses, probably better suited to the needs of our farmers and teamsters than some of the ponderous and less agile pure-bloods.

There are, consequently, horses of all breeds in this country. A glance at the various studbooks will convince anyone of the excellence of the individual representations of each breed. Besides these there are our own well-known standard-bred trotting horses, and that varied, nondescript horse known as the "native stock," a name conveying no information to the uninitiated, but applied to a large and well-recognized class of horses which ofttimes make excellent farm, light-draft, or road horses.

In addition to these are the thoroughbred, the saddle horse, and the horse of the Western range.

Hence there is no difficulty in breeding the kind of horses needed for our own varied purposes or required by the foreign trade, and this latter demand is by no means difficult to satisfy, as the purchases made by the foreign buyers during the past five years prove.

This trade does not require either an impossible or an ideal horse suited to all purposes; but it does demand good horses of every kind, thoroughly prepared for their special work. A horse to bring a remunerative price, either for home or foreign service, must fill a distinct place, i. e., he must be a good one of his kind, whether that be a cavalry horse, a draft horse, a carriage horse, a trotter, a hunter, a polo pony, or what kind soever. The standard by which good horses are judged is practically the same on both continents. A good horse in America is a good horse in Europe provided he fills a distinct want in the business of the country. In Europe horses pull carts, cabs, omnibuses, coaches, trams, plows, etc., and carry men on their backs. Thus they need horses of all breeds, for no one breed can possibly fill all of these requirements satisfactorily.

Europe is far away. It costs from $30 to $40 after the horse is purchased in Chicago, Buffalo, or elsewhere in the Eastern half of the United States before he can be disposed of in London, Antwerp, Paris, or Hamburg. This charge is as great on a cheap as on a high priced horse, hence, even if there were a demand for them, the profit on cheap horses would be too small to justify the risks. Therefore, the horses shipped abroad, while of the same breed and used for the same purpose as those sold for domestic trade, are on the whole a better lot of individuals.

Because of hard times and consequent low prices, horses could be

bought in this country and shipped to Europe for a sum of money less than the cost of production in those countries; and European producers of the kind of horses usually exported not being able to compete have in many cases gone out of the business. However, as the demand for horses in this country increases and values rise, competition by horse raisers in Europe will again be strong, horse breeding will again resume its sway in the countries at present affected, and unless ways and means are devised to hold our vantage ground this valuable addition to our agricultural exports will decline.

At present there is a scarcity of desirable animals, and prices are rising. The susceptibility of an increase of the present value of export business is therefore of vital importance to horse breeders of the United States.

The larger part of the export trade consists of draft and road horses, the former weighing over 1,600 pounds and being either pure blood or half-breed Clydesdale, Percheron, Shire, or Belgian; and the latter mostly standard-bred trotting stock, weighing from 1,000 to 1,200 pounds, and being assigned according to their fitness to coaches, cabs, trams, light wagons, etc.

Soundness, size, style, and an aptitude for some special work is required of every horse that is expected to fetch more than the price paid for plugs. No longer does the glamor of a great ancestral pedigree make a misshaped and unsound horse in demand as a breeder. The blood of Hambletonian, Wilkes, or Mambrino is as valuable as ever, having lost nothing of its prepotency; but the individual must have merit of its own other than "sired by So-and-So" to make him acceptable to the public.

An inference may be readily drawn as to the character of horses desired by each of the countries mentioned below:

Great Britain.—Ninety per cent of all horses shipped to this country are draft horses, about 7 per cent are high-class coachers, and 3 per cent trotting and light carriage horses.

Germany.—Ninety-five per cent of all the horses shipped to Hamburg are draft horses weighing 1,500 pounds or upward, the other 5 per cent being made up of high-class carriage, running, and trotting horses. Most of the latter are reshipped to Austria.

France.—About 85 per cent of the horses exported to this country are what are termed cabbers. The other 15 per cent are about equally divided between draft horses and trotters.

Belgium.—About 2 per cent of those sent to Antwerp are trotting or light buggy horses, 23 per cent street-car horses weighing 1,200 pounds, and 75 per cent draft horses weighing 1,600 pounds and upward.

NUMBER AND VALUE OF HORSES EXPORTED FROM THE UNITED STATES.

The following tables, furnished by the Section of Foreign Markets, United States Department of Agriculture, give not only the number

and value of horses exported to Europe but to all other countries for the five years 1893–1897:

Number of horses exported from the United States to the several foreign countries during each fiscal year from 1893 to 1897, inclusive.

Countries to which exported.	Years ended June 30—					Annual average 1893–1897.	
	1893.	1894.	1895.	1896.	1897.		
	Number.	*Number.*	*Number.*	*Number.*	*Number.*	*Number.*	*Per cent.*
United Kingdom	564	1,355	5,834	12,022	19,350	7,825	45.05
Canada	1,600	2,639	4,493	5,683	3,902	3,664	21.09
Germany	33	12	1,324	3,686	4,897	1,990	11.45
Belgium	.....	77	300	1,134	4,213	1,145	6.59
Mexico	457	507	855	987	1,884	938	5.40
West Indies:							
Cuba	42	99	67	.....	3,889	819	4.71
British	105	80	121	263	241	162	.93
Haiti	13	38	26	47	13	28	.16
French	4	13	26	41	13	19	.11
Porto Rico	.....	.....	7	11	19	7	.04
Santo Domingo	4	5	3	5	11	6	.04
Dutch	.....	1	6	5	.....	2	.01
Danish	1	.....	5	2	.....	2	.01
Total	169	236	261	374	4,186	1,045	6.01
Central America:							
Guatemala	11	206	186	526	278	241	1.39
Salvador	9	23	11	7	3	11	.06
Costa Rica	17	8	5	5	8	9	.05
Nicaragua	.....	4	.....	.....	13	3	.02
Honduras	.....	3	.....	4	59	13	.07
Total	37	244	202	542	361	277	1.59
France	2	.....	511	397	23	187	1.08
Hawaii	37	46	109	129	354	135	.78
Venezuela	6	38	25	17	37	25	.14
Bermuda	19	26	30	41	49	33	.19
Italy	1	2	3	4	1	2	.01
British Guiana	24	49	18	11	131	47	.27
All other countries	18	15	19	99	144	58	.35
Total	2,967	5,246	13,984	25,126	39,532	17,371	100.00

Value of horses exported from the United States to the several foreign countries during each fiscal year from 1893 to 1897, inclusive.

Countries to which exported.	Years ended June 30—					Annual average, 1893–1897.	
	1893.	1894.	1895.	1896.	1897.		
	Dollars.	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Per cent.*
United Kingdom	204,035	307,375	952,532	1,776,600	2,579,736	1,164,056	47.18
Canada	289,492	480,078	710,727	693,639	478,574	530,502	21.50
Germany	79,950	24,500	260,432	614,362	822,250	360,299	14.60
Belgium	.....	4,300	45,960	174,161	465,365	137,957	5.59
Mexico	64,885	155,804	61,242	62,239	88,978	86,630	3.51
West Indies:							
Cuba	10,020	16,230	10,479	.....	194,180	46,182	1.87
British	18,558	12,306	16,609	26,959	21,928	19,272	.78
Haiti	2,625	6,975	3,710	9,179	2,745	5,047	.20
French	1,570	2,800	5,765	6,700	2,415	3,850	.16
Porto Rico	.....	.....	1,125	1,570	4,590	1,457	.06
Santo Domingo	1,200	1,525	690	600	2,502	1,303	.05
Dutch	.....	300	935	650	.....	377	.02
Danish	500	.....	600	250	.....	270	.01
Total	34,473	40,136	39,913	45,908	228,360	77,758	3.15
Central America:							
Guatemala	4,200	34,490	23,930	57,068	26,585	29,259	1.19
Salvador	2,100	4,950	2,750	1,600	400	2,360	.09
Costa Rica	5,250	1,825	650	1,140	1,732	2,239	.09
Nicaragua	.....	2,150	.....	.....	1,275	685	.03
Honduras	.....	775	.....	370	2,100	649	.03
Total	12,150	44,190	27,330	60,198	32,092	35,192	1.43

Value of horses exported from the United States to the several foreign countries during each fiscal year from 1893 to 1897, inclusive—Continued.

Countries to which exported.	Years ended June 30—					Annual average 1893-1897.	
	1893.	1894.	1895.	1896.	1897.		
	Dollars.	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Per cent.*
France	3,750	.....	60,875	58,600	8,500	26,345	1.07
Hawaii	7,823	7,760	12,637	14,280	37,030	15,906	.64
Venezuela	1,974	9,540	9,460	7,256	10,110	7,668	.31
Bermuda	6,150	4,337	5,315	8,710	5,960	6,094	.25
Italy	1,000	3,000	15,000	3,200	800	4,600	.19
British Guiana	3,250	8,755	2,415	2,900	1,425	3,749	.15
All other countries	9,675	19,220	5,460	8,650	10,085	10,618	.43
Total	718,607	1,108,995	2,209,298	3,530,703	4,769,265	2,467,374	100.00

REPORTS AND EXTRACTS FROM REPORTS RELATING TO THE USE OF AMERICAN HORSES IN FOREIGN COUNTRIES.

GREAT BRITAIN'S PURCHASES OF CAVALRY HORSES IN ARGENTINA.

[Letter from Hon. William I. Buchanan, American minister to Argentina,* dated November 19, 1898.]

Knowing the interest taken by the Department of Agriculture and our people in general in all that affects the market abroad for our horses, I have taken some trouble to gather together such information as possible with regard to the purchases of Argentine horses being made here, for the second time, by the British Government for its troops in Africa.

All purchases of horses are made by commissions of officers from the "Remount department" of the British army, which is a branch of the headquarters staff at London, having sole control over the purchases of horses used by the British army throughout the world.

The appointments of officers for this service are for the same period as those for other staff positions—five years. The headquarters staff consists of one inspector-general (a general officer), one deputy assistant general (of any rank), three assistant inspectors (colonels), two staff captains, about one hundred men from the Woolwich depot, and the same from that of Dublin, and as many veterinary surgeons as are required.

The commission making purchases here consists of two officers who are advised by two veterinary surgeons. They have this year purchased about the same number of horses as they did last—1,500. They have bought three classes of horses:

(*a*) Cavalry: A well-bred horse (I learn very difficult to get here) 15 hands 1 inch to 16 hands high, and bred from thoroughbred sires and half-bred mares.

(*b*) Artillery: A coarser-bred horse than (a) and with more weight, bone and substance and less quality; 15 hands 2 inches to 16 hands high.

* By the courtesy of the Honorable the Secretary of State.

(*c*) Cobs: From 14 hands 1 inch to 15 hands; these are coarse bred, weight-carrying animals for mounted infantry.

(*a*) and (*b*) are required to be tame enough to handle, i. e., to lead and to examine as to age and soundness; (*c*) must all be ridden before they will be bought.

No horses over 7 years old are purchased and but very few under 4 years old.

The prices paid by the commission this year are higher than those paid last year. This is largely due to the "fall in gold," but in some degree to the decreasing number of good desirable animals met with. The latter is especially true, I am told, with regard to the quality of cavalry horses desired.

This year prices have been for:

(*a*) Cavalry horses	* $100 to $250.
(*b*) Royal artillery horses	100 to 200.
(*c*) Cobs	70 to 80.

I think an average charge of $10 (paper) per head can be added to these prices for freight from the "estancia" to this city.

Some mules have been bought by the commission this year at from $70 to $120 (paper) per head, but they are of an inferior class; indeed good mules do not seem to exist here in any numbers.

All these horses are shipped to Cape Colony, Natal, and Matabeleland in ships chartered by the British Government. It is impossible to give the freight per head, but it can be stated that it figures out more than $35 gold.

The fittings on board ship cost about $5 gold per head. The time consumed on the journey between here and the Cape is about twenty-three days. The men who take care of the horses during the voyage are paid £4 ($19.44 gold) for the trip.

It is claimed by the officers of the commission that it is more advantageous to charter a ship entire to carry the horses they purchase than to make a contract freight rate, since they are thus not only in a position to take better care of their stock, but in addition are able to carry alfalfa as cargo; and as they have to import into Africa almost all the forage they use and can buy alfalfa here at $40 (paper) per Argentine ton, 2,204 pounds, baled and at ship's side, they find it profitable to charter outright steamers of large carrying capacity.

In response to my inquiry as to the general soundness of Argentine horses, I was told by a member of the commission that fully 70 per cent of the horses offered them were sound, but that they found only 5 to 10 per cent of those offered suitable for their use. The diseases

* The average price paid for the larger number bought would be about $190. These prices are in Argentine paper money. To reduce them to United States currency first divide by an average gold rate of 2.60 and then multiply the result by 0.965, the value of the Argentine gold peso in United States currency. As a result of this calculation the Argentine paper dollar is found to be worth a fraction over 37 cents in gold.

found among the horses offered were cataracts, ring and side bones, and spavin; many had defective feet. I was also told, in reply to a question I asked that, from my informant's point of view, the best animals were produced here by crossing the native stock with thoroughbred blood, and that the use here of a heavy draft horse as a sire had not given good results.

Members of the commission told me that they were each year obliged to buy a large number of horses for Africa alone, owing chiefly to the number of horses which die there yearly from what is known as "horse sickness," a form of malarial fever that is epidemic there, and not yet understood by their veterinary surgeons, although it has been studied carefully for several years. It is said that 18 per cent of the horses used by the British forces in Africa die each year from this disease alone, whereas not more than 2 per cent die from all other diseases.

Should the marked "fall in gold" or appreciation in the value of the paper money of this country that has taken place here during the past year be maintained or increased it will be less advantageous for the commission to buy horses here in the future, since the net cost in pounds sterling increases with "falling gold." In the event "low gold" continues, therefore, Australia will most likely be the point the commission will next select for their operations. In that connection I venture to suggest that I believe from conversations had with members of the commission that it would be well for us to give especial attention to the needs of the "Remount department," to which I have made reference, as I believe cavalry horses can be advantageously bought in our country, and I am quite convinced that that class of horses is exceedingly limited here.

AMERICAN HORSES IN BELGIUM.

[Letter from Hon. Bellamy Storer, Minister of the United States to Belgium, dated Brussels, September 20, 1897.]

SIR: Learning of your desire to extend, if possible, the export trade of the United States in horses as well as in cattle, especially your hope that the United States might supply larger numbers of horses for military service in Europe, I took advantage of the occasion of a visit to Antwerp, made for the purpose of examining the question of the importation of cattle, to see the stables used for imported horses at that city.

There is no duty on horses imported into Belgium, and therefore no "bonded" stables are needed.

The largest of these stables are called "the American stables," where the horses, after having been examined on the dock by Government veterinarians, are brought and kept either for private sale or for sale by auction. There were about 400 horses, all just landed from New York, at the time of my visit, and I am told that they have received as high as 7,000 horses from the United States in a year.

These horses are brought from both Canada and the United States, either direct to Antwerp across the Atlantic, or after the transshipment in England from that country to Belgium.

The latter mode, while of course more expensive, enables the dealers at times to sell a horse as English or Irish instead of American, at a higher price. The stables, as far as I could learn, are entirely run on a commission basis and horses remain there as long as the dealers or importers choose to leave them.

These 400 American horses were decidedly of the common work-horse type, having among them very few which showed a trace of either action or blood. One lot of 24 horses had been sold at private sale for 950 francs * a head, to go to Strassburg, on the Upper Rhine. These were rather the best of the whole lot of working horses and were such as our farmers in the Ohio Valley would ask from $60 to $90 for. There were a few draft horses among the remainder showing decided traces of Flemish admixture, but falling far short of the fine draft horses for which Flanders is famous. Two hundred and ninety of the horses had been brought over by one American dealer, who was preparing to sell at auction on the fourth day after landing. This I mention to show the good average condition in which horses are delivered at Antwerp by the steamship companies without any special care having been taken about them. In all these 400 horses I think there were but four or five which showed signs of illness, and perhaps double that number had been slightly cut or galled during the voyage. It was impossible to find out from this man or any other of the dealers what they had paid for these horses in America, or, except very vaguely, from what part of the United States they came.

On this occasion I had the advantage of the company of the military attaché of this legation, Lieutenant Langhorne, of the First Cavalry, whose practical knowledge and long experience in the purchase of horses for our Army made his presence and comments of the greatest interest and value.

On leaving these stables we were able to obtain permission to visit and examine the collections of the famous draft horses of Flanders, owned by the various cooperative societies of teamsters and truckmen who do the business of the docks at Antwerp. These societies are supposed to own the finest stables of these horses in existence.

The magnificent condition of these animals showed the care given them and the pride taken in them by their owners. Each member of the society has the care of two special horses and is charged with the sole responsibility of their health and condition, being given absolute carté blanché as to the amount and quality of their feed and the details of looking after them.

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* The State Department gives the value of the franc in United States money as 19.3 cents. Ordinary calculations in round numbers are usually made on the basis of five francs to the dollar.

We were able also to see a large number of horses just brought from America for the market in Paris, the freight from New York via Antwerp to Paris being less than that via Havre. These horses came from Indiana and seemed to be a good common grade of farm horse, apparently all selected for soundness. The dealer expected to sell about half of them for French military service, while the other half, he said, would go into the cab service at Paris. It was impossible to obtain from him the information as to how much he paid for these horses in America or as to what he expected to get for them in Paris; but as prices are rather higher there than in Antwerp, taking into consideration the quality of these horses compared with those I have mentioned above, I suppose he would expect on an average about 1,100 francs.

A certain number of high-bred saddle horses for park riding and officers' mounts were observed, but there was risk of their finding no market.

I am satisfied of two things:

First. That there is little chance for sale in Belgium for our finest and largest draft horses, because the home bred are larger and finer looking. Among the great truck horses we saw were two pairs of Americans, which, while fine animals, were so much smaller and less showy than the enormous Flemish horses that it was evident the popular mind would not accept them as a substitute.

Second. That the horses which will meet with a sale in all the various countries supplied through the port of Antwerp, which is the largest horse-importing city on the Continent, are the common, plain farmers' horses from 5 to 7 years of age, without speed, but with good strength and endurance, such as were sold in the Ohio Valley during the last three or four years at from $50 to $75. These, I think, would meet with a sale at from $150 to $200 at Antwerp if they were in good condition.

I am informed that it has always been and is now impossible to sell any American horses to the military establishments in Belgium. The purchases for this purpose are so much controlled by government routine methods that this avenue is practically closed to any innovation in selection.

REPORT OF THE AMERICAN MILITARY ATTACHÉ.

[Report of Lieut. G. T. Langhorne, military attaché * of the United States Legation at Brussels, dated October 20, 1897.]

SIR: A few weeks ago the United States minister, Hon. Bellamy Storer, invited me to accompany him to Antwerp in order to examine with him into the question of the importation of horses from the United States into Belgium, as well as to other countries of Europe, through the port of Antwerp. He has expressed a desire to have me

* By courtesy of the honorable the Secretary of War.

make a report on this subject—such a report as might be of interest to the Department of Agriculture.

I therefore have the honor to submit to you in brief the ideas suggested to me by an examination of the subject.

There will probably be imported this year through Antwerp about 20,000 horses from America. A number of these will come from Canada.

We saw about 200 horses that had just been brought from New York, most of them having been bought in or near Chicago. They were of all sorts. The draft animals were fairly good, but few of the so-called carriage horses had any pretense to good breeding or to style. There were one or two fine animals, but the whole lot looked as if they had been picked up at small cost, with care taken only for soundness. They had stood the voyage remarkably well. Other lots of horses were shown that appeared to much better advantage. They were going to France and to Switzerland (some for military service), and were expected to bring higher prices there than those sent to Belgium.

We were taken to the stables of two of the cooperative companies of workmen to see there the best kind of draft horses used in Antwerp. These were magnificent animals, some of them weighing over 2,500 pounds and standing 17½ and even 18 hands high. Many of them weighed over 2,000 pounds. As a rule they were of the Flemish breed, although there were a number of American ones among them. These latter, although not so large (being, however, over 16 hands and 1,600 pounds), appeared more muscular than the former in proportion. A single one of these horses is expected to draw 1,100 pounds on the low trucks (four wheels) used in the streets of Antwerp.

In importing horses to Europe care should first of all be taken as to soundness, as even a slight splint would ruin the sale of a good animal. Each horse imported to Belgium is inspected by a Government veterinarian, for which there is a charge of 2½ francs. Within the last few weeks this charge on horses billed to other countries and merely passing through Belgium has been discontinued.

CARRIAGE HORSES, ETC.

Carriage horses, etc., are much sought after, and in Brussels and the rest of the continent bring large prices when of the popular type. Short-coupled, high-headed, and high-stepping horses are what is wanted, and not the fast roadsters seen in many parts of the country. The latter lift their feet high only when going fast. Here horses that step high when going slow—park horses, in fact—are the thing.

HACKNEYS, COACH HORSES, ETC.

Hackneys, coach horses, cobs, etc., of great style and action always find a good market. Sometimes in March and April the fast road-

sters can be sold to advantage for use in the country, but as a rule they do not bring the prices of the more showy park animals.

SADDLE HORSES.

A great many of these are in use. Every rider in Belgium uses the English saddle and rides with the English seat, and therefore their mounts must be in keeping. The Irish and English horses, well bred, with small heads and ears, necks tapering and easily arched, short, straight backs, long, sloping shoulders, and clean legs with high knee action, are of the type most in demand. Everything is for style and showy action. The gaits are the trot, the walk, the canter, and the gallop, in that order.

HUNTERS AND JUMPERS.

Although there is no hunting to amount to anything in this country, still a high jumper will bring almost any price on account of the fact that in the spring there are many contests with prizes for jumping.

In the three classes above mentioned there is no limit to be put as to the price, as so much depends on the need and means of the seller and buyer. A wealthy man wanting a riding animal will readily give 4,000 francs or more for a stylish, well-built horse that suits his fancy. I have asked the prices of many horses here in Brussels, and have found them all high. A good-looking pair of bay carriage horses, 15¾ hands, of good action, were held at 8,000 francs ($1,600).

DRAFT HORSES.

These have the quickest sale. There is a good market for them always. The best type is the short-coupled, short-legged, large-bodied, large-boned horse, with a rather small, intelligent head. No very pronounced Roman noses nor long, coarse hair on the legs above the fetlocks are liked.

The heavy weights (some of the American horses reach 1,800 pounds) bring from $190 up, while the smaller animals, 800 to 1,000 pounds, bring from $125 up when good. Such horses can be used for delivery wagons and for trams or street cars. They can be found in many parts of our country.

Horsemen and buyers here object to the long-legged, long-backed horse of any sort, and such animals do not seem to bring as good prices as others perhaps not so finely bred, but more to the taste of the buyers.

The cavalry and artillery horses are furnished to the Government by contract.

The Irish horse is here again the favorite. Perhaps American animals shipped through England or Ireland oftentimes become naturalized in a few days and are sold as natives of those islands. The price paid is between 1,100 and 1,200 francs. At present it is 1,150

francs. The descriptions of the horses in the army here and those of our own service are practically the same, but the animals themselves are quite different. This seems paradoxical, but it is due to the different needs and the ideas in the two countries. We have weight carriers, with large barrels, to stand hard work and to become "rustlers" when forage gives out. The horses here are more carefully treated, have much smaller barrels, and are more lightly and gracefully built than ours. I think that our Government horses are better than those of this country, but the officers here have much finer mounts than our own.

I came from London a few days ago on the same boat with 30 Irish horses being brought over for the Belgian cavalry. They were animals of the small hunter type, rather well bred, although many of them had large ears and not pretty heads. The dealer said that he paid £30* for them in the south of Ireland; the cost of bringing them over was about £2; he got for them 1,150 francs. His profit was then about £14 ($70) a head.

Horses for the service are inspected at the barracks of the regiments by boards consisting of two officers and a veterinarian, and the colonel or his representative is always present. When accepted they are paid for at the contract price. The contractors become expert in buying the type of animal that they know from experience will probably be accepted, make few mistakes, and have few horses left on their hands.

Officers are allowed to choose and to take from the contractors at the fixed price horses that they wish, but frequently they will buy outside and pay much more for horses that suit them. They, too, are fond of the high-stepping, stylish saddle animals, and, like the Mexican in regard to his sombrero, will give more than their year's pay for a fine mount.

Those who wish to import horses to this country or to the rest of the Continent will do well to communicate with Mr. B. Gregoir, 5 Place de la Commune, Antwerp. He is a Belgian who has traveled a great deal in the United States. He has built large stables, now accommodating more than 300 horses, in Antwerp for the convenience of shippers. The sellers have the use of the stables, etc., according to the following:

AMERICAN STABLES.

[Cable address: American Stables, Antwerp. A B C code used. Rue Montigney, Antwerp. Space for 160 horses, 10 box stalls.]

The largest stables in Belgium, with best accommodations for foreign shippers; near the quay, railway depot, great boulevards, street cars coming from any part of the city. Nice and cheap rooms and boarding same place. Great manage, and

*The State Department gives the value of the £ sterling as $4.866 in United States money. Ordinary calculations in round numbers are usually made on the basis of five dollars to the pound (£).

everything necessary to drive or ride the horses; telephone freely to the disposal of customers.

Entrance, 2 francs per horse. All other costs, including landing, conduct to stables, feeding, cares, reshipping horses, and one man per ten horses: In stalls, 3 francs per horse and day; in box stalls, 5 francs.

Shoeing, veterinary cares, certificates, inspection, and medicines are the only extra costs to be paid.

His commission is 5 per cent, of which 3 per cent, as I understand, goes to the Government. This is the only good place that I could find, and by shipping to him many annoyances are avoided until the shipper learns the ways of this country and can make better arrangements.

The tails of all horses here are docked. This is badly done, as a rule, in America. At the stables above mentioned the horses are docked by an expert at no charge to the shipper, the operator keeping the hair cut off as his recompense.

The Phœnix line of steamships brings over the horses at a cost of $20 per head from New York to Antwerp, or for $30 including everything—insurance, feeding, attendance, and all. The cost of the same from Chicago to Antwerp is about $40. The voyage takes two weeks or less, and the horses arrive in excellent condition. I have seen about four lots that came in that way. The tails should always be sacked, to avoid their being rubbed. The horses arrived on Saturdays, Sundays, or Mondays, and were sold the following Thursdays. I saw those that were sold on the 16th of September. They appeared to be a very indifferent lot. Those sold on the 14th of October, which I also saw, were much better, but still not by any means of superior types, although many of the draft animals were excellent, and such brought over 1,000 francs. I understood from a confidential source that the shippers in these instances realized about $40 to $43 per horse. The animals cost on an average about $96 laid down in Antwerp.

The buyers were principally men having sales stables, who, of course, expected to make a profit by reselling their purchases. In selling pairs it is well to put them up first separately and then as a pair, as this is allowed in the Belgian trade; and if not so much is offered on the pair as on the two sold singly the horses go to the highest separate bidders.

All horses sent over should be well broken and have good manners, not only in harness and under the saddle, but also in the stable. The attendants in this country are by no means good horsemen, and it takes a well-broken animal to stand the treatment it receives.

Mares are in as general use as geldings, and there seems to be no difference as to price. This is so also of those in the military service. Roans are very popular, and, all other things being equal, bring higher prices.

I have experienced some difficulty in collecting the above informa-

tion, and have taken into consideration the fact that horse dealers here as elsewhere are prone to exaggeration, depending, of course, upon the point of view.

REQUIREMENTS FOR GERMAN ARMY HORSES.

[Extract from report of Lieutenant von Kuhn.]

Horses for service in the German army must have good blood, sound legs and feet, a strong back, fit to carry heavy weight. Special attention is paid to the compactness of the back and groin. It is also necessary for the horses to have a regular, swinging action. Further, it is considered desirable that the horses should have a long and settled shoulder, well-marked withers, large quarters, a broad chest, a well-shaped neck, a muscular forearm, with short bones and wiry tendons, strong hocks, and fetlocks in good position, neither too soft nor too straight.

Horses bought for the cuirassier regiments must measure at the least 1.53 meters; those for all regiments of the uhlans, for the dragoons, and the hussars of the guard, 1.49 meters; for all other regiments of dragoons and hussars, 1.46 meters; the draft horses of the artillery, 1.52 meters, and for the charges of the artillery, 1.48 meters. In all these cases the lowest measure acceptable is given. Horses in the service of the cavalry are expected to do service for a term of ten years; those in the artillery nine years.

Every year about one-tenth of the horses doing service in the cavalry and the baggage department of the German army and one-ninth of the horses doing service in the artillery are put out and replaced by new animals.

For the Prussian part of the German army during the fiscal year 1897–98 provision is made for the purchase of 8,393 horses. For these horses, which have to be from three to five years of age, the average price paid is 830 marks.* On the same conditions 679 horses are required for the regiments of the Kingdom of Saxony and 444 horses, for which an average price of 1,150 marks is to be paid, are required for the Kingdom of Wurtemberg, while the Bavarian part of the German army requires about 1,200 horses, at an average price of about 1,050 marks. As a rule all those horses are bought at an age of from three to four years. First they are sent to so-called "remounting depots"—large pasture grounds belonging to the Government—where they remain for one year. The purchase of these horses is made by "Remonte-Aakaufscommissionen," i. e., by military boards constituted for the purpose of remounting the German cavalry and artillery and acting under direct supervision of the ministry of war. These boards are

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*The State Department gives the value of the German mark as 23.8 cents in United States money. Ordinary calculations in round numbers are usually made on the basis of four marks to the dollar.

permanently organized and consist of three officers and one veterinary surgeon.

Six boards for remounting purposes are provided for the German army, the German Empire being divided in six remounting districts. Every year those districts are visited by the commission allotted to them. It is the duty of the local civil authorities to make arrangements for the holding of fairs for remounting purposes. This is done by means of public advertisement. To these fairs horse breeders and horse dealers send their stock. The purchase of the horses is done free-handed by the board. The price agreed upon is paid cash down immediately after the conclusion of the bargain.

There is no provision existing prohibiting the purchase of imported horses; the price to be paid is a matter left to the purchasing board. on condition that the average price is not to be exceeded.

Amounts of 1,000 to 1,200 marks are very seldom paid for horses, except by the governments of Würtemberg and Bavaria. In Prussia 1,000 to 1,200 marks are paid only if horses are used for special purposes—for instance, for the use of the bearers of the colors and the kettledrums. These high prices are paid so seldom that they hardly can be taken into consideration as an inducement for foreign importers.

Of the four most important purchasing boards for remounting purposes, two are for eastern Prussia and Posen, one for Hanover, one for Mecklenburg, and one for Schleswig-Holstein. These boards buy four-fifths of all the horses used in the German army. The three boards first mentioned purchase almost the whole number of horses needed for cavalry purposes. In the provinces of eastern Prussia, western Prussia, and Posen horse raising is in a very flourishing condition, the animals for the most part belonging to the "Trakehnen" breed. The Trakehnen horse is originally a horse native to the soil and used for farming work, crossbred with Russian horses. In the course of this century a new brand of Trakehnen horses has been raised by crossbreeding with English full-blood stallions. This work has been carried on successfully, especially for the last twenty-five years, and as a consequence the Trakehnen breed has been much improved, especially as far as their speed is concerned.

Although the use of English stallions has met with considerable opposition in different quarters, it is still carried on to a great extent. The purchasing board of Mecklenburg, Hanover, and Schleswig-Holstein buy mostly horses of a heavier breed for artillery. These horses belong to the native brand of Mecklenburg, which has been much improved in the course of the last few years by crossbreeding with English stallions. For the use of the German army no horses are directly imported from foreign countries.

As far as the import of American horses for army purposes comes nto consideration, it has to be stated that there are no official objec-

tions against it, and no objections based on the quality of the American horse.

The American exporter as well as the German importer has the same right as every German horse raiser or horse dealer to bring American horses to the fairs held for remounting purposes and to offer them for sale to the purchasing boards; but it must be taken into consideration that in buying the horses for the use of the German army the purchasing boards have the unlimited power to buy such horses as they deem fit, and if they choose to reject horses they are not expected to give any reasons for their action.

It is very probable that these boards would not hesitate to purchase at reasonable prices some American horses offered to them if they considered them fit for the service in question, but the situation undoubtedly would be changed in case American horses should be imported in great number for army purposes. The officers constituting the purchasing boards are experts, and in view of the control which the Government exercises over all imports it would be impossible to conceal the origin of these horses for any length of time.

The horses used in Germany in civil life for business purposes of different kinds average in height from 1.46 to 1.54 meters. Dark colors are preferred as a rule. For heavy horses, such as are used for delivery wagons of breweries and for the delivery of freight, a larger brand is in demand—horses weighing about 500 to 600 kilograms. As a matter of principle, stallions are not taken, and geldings are preferred to mares. Horses raised in eastern Prussia and Mecklenburg are considered favorites, but a great many of Danish, Belgian, French, and American origin are used. The street-car companies pay for their horses on the average 800 to 900 marks, and buy them at the age of 5 to 7 years. A street-car horse serves on an average for five years, but there are cases where horses have done service for the street-car companies up to twelve aud even fifteen years. In the service of the street-car companies are found a great number of Danish, Hungarian, and French horses. In connection with this it may be stated that the demand for horses for the street-car companies has greatly diminished in the course of the last few years and is bound to grow less from year to year on account of the establishment of street-car lines run by electric power. In a great many of the larger cities in Germany the use of horsepower for street-car purposes has already been abolished altogether, and it is a question of comparatively a few years when the whole system of street cars in Berlin will also be run by electric power. The street car drawn by horses will soon be confined to very small places.

The omnibus companies as a rule use very large carriages for the conveniences of the passengers, and accordingly need very heavy and

powerful horses, for which an average price of 1,200 marks is paid. In some cases from 1,300 to 1,400 marks have been paid for American horses by these companies, but it must be stated that the omnibus people have not been satisfied with their American purchases. Height of omnibus horses is about 1.53 meters.

The firms carrying on the freight-delivery business pay, as a rule, from 1,200 to 1,500 marks, and prefer horses raised in the northern part of Germany, France, Belgium, and Denmark. For a good working horse about 1,000 marks are paid.

Horses for private carriages command a very different price. Comparatively there is no great luxury indulged in horses by the carriage owners in Germany. Of course there are exceptions to this rule, but they are hardly worth consideration. It may be taken for granted that for horses used for private carriages 1,500 to 2,000 marks per head are paid on an average.

Of the prices paid for American fast trotters no statement can be made, because that depends entirely on the record, the pedigree, and similar points, by which the price changes from horse to horse.

The Berlin fire department and the mounted police in the large cities buy their horses from dealers with whom they have contracts. The fire department expends from 1,000 to 1,200 marks for a horse. In some cases they go as far as 1,350 marks, but this is seldom done. They prefer horses bred in Mecklenburg or in the eastern part of Prussia. The mounted police in the larger cities, especially in Berlin, are spendidly mounted on very heavy horses, measuring not less than 1.54 meters. As a matter of principle, gray horses are rejected as well by the fire department as by the police authorities. The mounted police pay about 1,000 marks for a horse. Only very gentle horses are taken, and none with faults which would be an obstacle to their use in crowded streets; so all biting and kicking horses are rejected, and the contractor is bound to replace them by other animals. The horses of the mounted police are put into service at the age of 5 to 7 years, very seldom younger, often older. As a rule they serve four years, then they are returned to the contractor. Under certain stipulated conditions he has to take those horses in partial payment for new ones, which he has to furnish. It may be stated here that the price paid for horses in the southern part of Germany is about 15 per cent higher than in the northern part.

A duty of 10 marks is levied for colts, yearlings, and horses of the age of 2 years; for horses older than 2 years, 20 marks have to be paid. A certificate of health, issued by the authorities of the country from which the horse is exported, is indispensable. At the arrival on German soil a veterinary inspection of the horses takes place. Quarantine for horses is abolished and only takes place when horses are

imported from countries which have been declared infected by contagious horse diseases.

To increase the export of American horses to Germany it would be advisable for American dealers and horse breeders to establish connections with dealers in the large cities of Germany. This method would be more advantageous than the establishment of special depots for the sale of American horses. The Russian Government some time ago established in Berlin stables, etc., for the sale of Russian trotters and expended a great amount of money in carrying on this establishment, but suffered considerable losses and finally concluded to shut up the business. If the United States desire to find a market in Germany for American horses it is absolutely necessary that great care should be taken in carrying the horses across the ocean. Dealers generally complain that American horses arrive in a very poor condition;* in consequence prices offered for them are low, and to bring them into condition costs time and money. Changes for the better would be effected by making arrangements with one or the other of the trans-Atlantic steamship companies. The statement made with reference to the condition in which the horses imported from the United States arrive in Germany apply but to the inferior animals; valuable trotters are of course very well taken care of, but the price paid for their transport is accordingly high.

A STATEMENT OF EXPERIENCE AND OBSERVATION IN SHIPPING HORSES TO GERMANY.

[Extract from letter of Mr. John A. Meyers, formerly Director of the Experiment Station of West Virginia, dated New York, June 7, 1898.]

My partner in this business was an ex-German officer, highly connected in Dresden and known to the secretary of war for the Kingdom of Saxony and the officers of some of the regiments in the barracks at Dresden. He is a citizen of Germany, which gave us considerable advantage in our chances of doing business in Germany over those possessed by the ordinary American citizen, unacquainted with their language, peculiar laws, and habits of business.

An American shipping horses to Germany will find it more profitable to ship heavy and medium draft horses. These can be sold in Hamburg, if landed in good condition, for from 650 to 800 marks a head, equivalent to in round numbers from about $160 to $200 per head. There is also a demand for a limited supply of fine saddle and coach horses. It will not pay to ship anything except the best horses. The army officers like to have good horses, for which they can pay from $200 to $500 a head, depending upon the quality of the horse. There is, however, a regulation, either written or implied, requiring them to

* See letter of Meyers and letter of minister to Belgium, p. 24.

purchase their horses from German citizens, and we would not have been able to have disposed of a single horse to the officers of the army had it not been for the fact that my partner himself was a German. The habits of the officers are such that a horse seems to be thoroughly discussed among them before a purchase is made, and at present there is a determination in some quarters to prevent as far as possible the introduction of American horses into the army. My partner, however, succeeded in negotiating several sales with the army officers, and these, with the sales that he had made from a former shipment, all turned out to be extremely satisfactory. We had facilities for knowing that the officers who had bought the horses, without exception, made most flattering reports to their colonels in regard to them, and that these reports to the colonels also reached the war department of the Kingdom of Saxony. We were endeavoring to negotiate a sale of horses to the Swiss Government, and it came to us quite directly that the report of the Saxon war department upon the American horses in the Saxon army to the Swiss Government was highly favorable. It is, however, impracticable to attempt to supply the army with American horses at the present time, unless combinations can be effected through channels which we fail to discover.

The trade in Germany is carried on quite differently from that in America. Their business methods and their manner of negotiating sales are entirely different from ours. There is no such thing as fixed prices in Germany, and it is not an uncommon thing for a dealer to ask three times as much as he will take for a horse. The intending purchaser selects the horse he wishes, and then goes off with the dealer to a café or beer garden, where they smoke and drink beer and continue in negotiations, the dealer gradually falling in his price and the intending purchaser rising in his, until, perhaps, they come to an agreement. The intending purchaser, accompanied by his friends, makes two or three visits and at last brings a veterinarian.

Such a thing as competition, as known to us, would be considered dishonorable among the Germans, and if a gentleman is considering the purchase of a horse and another comes around who is well pleased with it, you dare not under any circumstances allow him to know that the other man is thinking of purchasing the animal, as he would at once stand aside and wait until the other man made up his mind. The sale of horses by auction is substantially unknown in Germany and it will probably be a long time before it is well introduced, if it should ever be, as it meets with opposition from all those people who live upon the men who are dealing in horses. There is one firm in Berlin of very considerable wealth that is able to buy extensively and continue the auction of horses somewhat on the principle followed in the large sales of horses in this country, but it is compelled in many cases, I am told, to bid in its horses in order to prevent loss. This combination of dealers not to bid against one another and to follow the principle of finding fault with a horse that a man is

thinking of buying also makes it a precarious business for the American who takes a cargo of horses to Hamburg, which is the principal point where American horses are landed in Germany. The business in Hamburg is under the control of local dealers who have connections with the dealers in the interior of the country.

It is quite the custom in Germany for the dealers to go to Hamburg and buy American horses to take into the interior. The better class of these horses, if draft horses, are often sold as Belgian horses; if saddle or coach horses, they are often sold as English horses; and the culls are sold in the interior as American horses. Every defect that is discovered in any horse is promptly applied to all American horses, and studiously published in the papers and spread in all directions by the dealers, their effort being to prevent an extension of the business in Germany.

We went with the determination to try to establish a good reputation and guaranteed every horse to be exactly as represented. If found not to be so, it would be returned. The fact that we were able, in spite of all opposition, to do business with the army officers called out several attacks upon us in the papers, the general expression of which was about as follows:

It is a matter very much to be regretted that American horses are being offered for sale in the German markets. This should not be permitted, as they come into competition with German-grown horses and tend to force down the prices of German horses. Two years ago a good draft horse in this section brought about 1,200 marks. Since the introduction of the American draft horses the prices have fallen to about 800 marks. The Americans have now begun to introduce coach and saddle horses. Upon investigation we find that the horses have proven so satisfactory that even officers of the army have purchased some of them. The enterprising Americans have been able to do a good business. The German dealers should improve their business methods, and the importation of American horses should be stopped.

It costs about $30 to ship a horse from New York to Hamburg. Horses can be shipped either by way of London, where they will be reshipped, or direct to Hamburg. The price by way of London is $30. The steamship company furnishes feed and attendance. If shipped direct to Hamburg, the price is $25, but the shipper must furnish the attendant and feed in addition. The steamship company allows the attendant to return free of charge. An attendant is needed for about every 10 horses. If the shipper wishes, he can have the horses insured at a premium of from $5 to $6 a head. The rates of insurance vary. The ordinary insurance placed upon a horse is $150, which the company pays promptly if the horse fails to walk ashore in Hamburg. If it is able to walk ashore, even should it die one-half hour after it lands, the insurance company will not pay. The horses are so well packed in the ship that there is little loss during transportation. The system of ventilation in the ships, however, is such that the horses nearly all catch bad colds, from which they suffer seriously during transportation and still more seriously after they arrive on the other

side. They are packed into the ship so closely that it is impossible for them to lie down during transportation, and when they arrive at the other side they are, of course, very stiff, more or less bruised and rubbed, and are really not ready to be offered for sale in the retail market for at least ten days. The principal losses at sea are caused by injudicious feeding and lack of careful attention to the horses. The attendant should notice them with great care, and if their bowels or kidneys fail to act regularly he should promptly administer proper medicines, as otherwise the horse will soon be in a condition beyond successful treatment.

In Hamburg there is a tax of $5 a head, and it costs about 50 cents a head to land the horses and transport them to the sales stables. The charges in Hamburg for keeping a horse are about $1 a day for the first two days, about 75 cents a day if they remain a week, and about 50 cents a day if they remain longer; this latter, however, by special contract. Unless an American has made a number of shipments and is thoroughly familiar with the details of the business, it is necessary for him to employ the services of a broker or commissioner who will look after the landing and transportation of the horses to the stables, the payment of the local tax, and the loading of the horses on the railroad cars. The railroad cars are arranged to carry 6 horses each, but by careful packing a person can put 10 head of smaller horses into each car. An attendant should accompany the train. The rates are fixed and are proportional to the distance the horses are shipped.

Horses can be boarded at towns in the interior at about 65 cents a day, and by careful contracting a person can have them kept for 60 cents a day.

All horses shipped to Germany go through a process of acclimation and are subject to what the Germans call "druse," a species of distemper which attacks the animal in various forms. Unless neglected, it is not fatal, but it incapacitates a horse for work and unfits it for exhibition purposes until after the attack. The attack usually lasts only a week or ten days, though the horse may be invalided from it for several weeks. It is quite a serious trouble.

There is another difficulty about the transportation of horses which can scarcely be overcome. The horses are affected differently by the ocean trip; the hair changes color in quite a perceptible degree, and one horse may lose flesh while another will gain, so that a man can not be certain that a pair of horses quite perfectly matched in New York will be matched when ready for sale on the other side of the ocean. We were compelled to break up several well-matched teams on this account.

In regard to the colors of horses, the favorite color is bay without markings; the white horse is substantially unsalable, and a gray horse is difficult to sell. Black horses should be shipped with long manes and tails. The demand for them is limited. They are used princi-

pally for funeral processions, hearses, etc. They should be entirely free of all markings, of solid black color, and large size. There is a good demand for dark sorrels if free from white markings. Saddle and coach horses are docked; draft horses are sold without being trimmed. In regard to gaits for horses, the only gaits required are walking, trotting, and galloping. Other gaits are objectionable. They insist upon horses of high action and courageous appearance. Trotting stock is little known in Germany, and is wholly unappreciated. They insist upon having the horses in good condition, and prefer a horse built on the style of the English cob as a coach and riding horse.

I have mentioned the difficulties that any American is likely to encounter who undertakes the business in Germany. He may prepare himself to face them, and if he can overcome them and form the proper connections in Germany, there is money to be made in the export of American horses.

HORSES IN FRANCE.

[Extract from a report by Mr. Edw. M. Green, of Paris, France.]

ENCOURAGEMENTS FOR IMPROVING THE RACE AND FOR BREEDING.

Much encouragement is offered by the Government, societies, and individuals for horse breeding and for improvement of the race, in the way of prizes at horse shows, hippodromes, trials, and races.

The horse shows have done much good not only in improving the breed, but in showing clearly to farmers and breeders what kind and class of animals they should raise and what is best fitted for the requirements of the country and for exportation. Undoubtedly great pains are taken in France for the improvement of the breed of their horses, and the results during the last ten years are very satisfactory, the statistics showing a continued increase not only in the number of approved stallions, but also in the number of mares served by stallions of improved breed. The business of horse breeding is popular in France and is increasing under the encouragement given by the Government and various societies. Automobiles and bicycles have undoubtedly supplanted the use of horses to some extent, and the number of those animals actually needed may be somewhat smaller than previously. Good authorities contend that the use of automobiles and bicycles will not affect the horse breeding in France as much as it will the importation of foreign horses.

HORSES AND THEIR USES.

Of the total number of horses in France about 1,080,000 horses and geldings and about 1,020,000 mares are employed for farming and agricultural purposes.

Race horses, mail-coach, riding, and private carriage horses come from all quarters, and their prices and sizes are hard to determine, as they are subject to the qualities of the animal and to the fancies of the purchasers. The race horses are generally of pure English or Anglo-Arabian blood. The mail-coach horses are of pure or half blood.

The Percheron, Boulonnais, and Normand horses are used for heavy draft purposes. The Percherons are used to a great extent for omnibus service (nearly exclusively so in Paris), but also for drays, wagons, carriages, carts, and farm work. The breeders of Percherons have taken great pains not to allow them to drift into the Clydesdale type, but to produce horses suitable for almost any kind of work, and they are successful in carrying out this purpose.

The Boulonnais horses come from Boulogne district and are used almost entirely for heavy draft service, being very large, of immense strength, and noted for being very active. They are somewhat taller than the Percherons, of heavier body and more compact. They are magnificent animals. The Boulonnais are much used in single harness for heavy drays and for goods carriages.

The "Normand" horses are smaller in size than the Percheron, and are used for draft purposes and farm work.

The Brittany horses are small and of great endurance. They are used by the railroad-passenger omnibus companies, for cabs, and also for light cavalry. They are generally used in double harness. As to the height and weight of the foregoing—

The Boulonnais are from 5 feet 4 inches to 5 feet 7 inches in height and weigh from 1,750 to 1,950 pounds; the Percherons are from 5 feet 3 inches to 5 feet 5 inches in height and weigh from 1,500 to 1,750 pounds; the Normands are from 5 feet 3 inches to 5 feet 4 inches in height and weigh from 1,300 to 1,450 pounds, and the Brittans are from 4 feet 10 inches to 5 feet 1 inch in height and weigh from 880 to 1,000 pounds.

Omnibus horses—Percheron—5 to 7 years old, cost 800 to 1,350 francs, averaging about 1,100 francs.

Livery-stable carriage horses in Paris are bought when about 4 to 5 years old, and cost from 1,800 to 2,200 francs. They have good action, are well-shaped strong animals, measuring about 5 feet 3 inches in height. Many Dutch horses are used for this class of work, being better tempered or kinder and more docile than the French horse. The food used is oats, hay, straw, and occasionally bran and carrots.

Cab horses come from everywhere, but principally from Denmark, Hungary, and from the Tarbes district (south of France); also from Brittany. They weigh from 770 to 880 pounds and stand about 4 feet 11 to 5 feet 1 inch. The cab horses cost from 700 to 950 francs, say an average of about 800 to 850 francs. The food used is generally a mixture of cracked corn (maize), oats, straw, bran, carrots, and biscuits, which the horses eat from nose bags.

Light cavalry horses—height, 5 feet to 5 feet 1 inch; weight, 775 to 880 pounds; cost, 900 to 1,100 francs. These horses come mostly from the south of France (Tarbes), but to some extent from Brittany and some other districts.

Horses for dragoon regiments are in height 5 feet 1 inch to 5 feet 2 inches; weight, 880 to 1,000 pounds, and cost on an average 1,200 to 1,300 francs. They are mostly French horses.

Cuirassiers and gendarmes horses are in height 5 feet 3 inches to 5 feet 4 inches, and weigh 1,050 to 1,150 pounds. They cost, on an average, 1,200 to 1,300 francs, and are mostly French horses.

Artillery and baggage-train horses are in height 5 feet to 5 feet 2 inches, weigh 990 to 1,100 pounds, and cost on an average 1,200 to 1,300 francs.

All army horses are 2½ to 3 years old—generally 3 years old when purchased. They are immediately sent to the supply stations, where they stay at least six months, when they are sent to the regiment to be trained by officers and soldiers specially detailed for the purpose. The training takes about six months, so that the horse is 4 years old when he is turned over to the trooper for regular service. When the army needs horses the Government advertises in the official paper for what is required, giving all details as to qualities, age, height, and weight, and the places at which horses may be presented by their owners for inspection and for bids. The commission which purchases horses is composed of a certain number of officers and a veterinary surgeon. When a horse is presented to the commission the officers agree among themselves what price they will give, subject to the veterinary's report, and the bid is made to the owner, who can accept or refuse it. Anyone may present horses to the said commission; it is open to all.

Some years ago the Government bought Arab horses for the light cavalry, but it appears that these horses (which are not unlike our Texas ponies) have not stood the climate well, and, besides, do not do well when shod. In Algeria they are not shod. The Government also tried light horses from South America, but the soldiers could do nothing with them. The horses now used for the light cavalry come from the south of France, being a crossbreed of Spanish-Arabian horses with mares of the country; some also come from Brittany.

AMERICAN HORSES.

I have taken great pains to find out why more American horses are not imported, as they would undoubtedly suit for carriages and cabs and farm work and, if care is taken, for army purposes. I have interviewed horse dealers, stable keepers, and veterinary surgeons and have come to the conclusion that the American horse has not had a fair trial in the Paris market.

There exists a prejudice against American horses because those that have been imported were not suitable for the requirements of the

market, being of inferior quality. From what I can learn, those horses must have been purchased in America only because they were cheap, without regard to the requirements of the French market, and being unfitted for the same have created a bad and false impression about our horses. A large livery-stable keeper who has 200 horses told me that he has only one American horse (carriage horse), standing 5 feet 3 inches, 5 years old, for which he paid 1,200 francs, and is much pleased with the animal, and would have bought more, even at a dearer price, but that those presented to him were such ugly, rectangular, long and flopping eared creatures that they would not suit at any price.

The veterinary surgeon told me that he knew the American horses and admired their good qualities, especially their powers of endurance, and could not understand why only such inferior quality came to France.

I believe that American horses would find a good market in France if pains were taken to send only such horses as will suit the needs of the purchasers.

SUMMARY OF A COMMUNICATION REGARDING AMERICAN HORSES USED BY THE LARGE HORSE COMPANIES IN PARIS, FRANCE.

[H. De Loncey in L'Acclimatation, March, 1898.]

For three years cargoes of American horses have continued to be received without interruption at Bordeaux and at Marseilles, and they are sold at public auction all over France; and yet there is much difference of opinion as to the true value of the American horse and its future in France. Some maintain that at the average of $200, the price paid at a recent sale at Lyons, they were cheap. Others, again, less enthusiastic, accord to the American horse preference over the French in some respects while in others they prefer the latter. The third group place them far below the domestic product, admitting, however, that they seem to "stop certain gaps," being purchased by persons who are apt to load themselves too readily at public sales.

The first visit paid by the writer was to the General Omnibus Company, Paris. Notwithstanding the great increase in mechanical traction, the number of horses in the company's stables, which for a long time was about 12,000, has been increased of later years until it reaches 16,000, a fact explained by the establishment of fifteen new lines. The horses consist of stallions, geldings, and mares in about equal proportions. The first American horses were purchased by this company three years ago. These are now at depot of La Bastille, a most important station, which includes 1,200 horses, all high-class stallions, supplying one of the most important and arduous lines run by the company. The American horses were closely examined. With

some exceptions these horses are not handsome, in spite of the numerous importations by prominent American breeders of Percheron stallions, whose descendants we were promised should supplant our native animals in our own markets. "There is no reason," said one of the principal employees of the company, "for our breeders to apprehend any serious competition from America. The so-called heavy American draft horse is a composite result of incongruous, unintelligent crossing without system, the results being inharmonious and defective in form. This horse has a heavy head, small neck, great mule ears, flat croup, long back, well built in front, but hind quarters defective, feet flat, colors objectionable, the coat altogether lacking sheen, average height 1.65 meters, good movement as to front but defective as to hind quarters. Except perhaps on the shoulder and forearm, the muscular masses which are so distinctive of our native draft breeds are wanting." Apart from these defects we were assured that the American draft horses were badly broken, having no well-defined paces, and generally awkward in their movements. Hitched up with well-broken French horses, however, they soon get used to harness; they eat well and are not dainty. While showing good work at first their service is not durable; after only two years' service they begin to show wear, the hind legs swell, and they are subject to fistulas. A comparison made on the spot with French horses which had been in the service twelve to fourteen years was invariably in favor of the latter, notwithstanding the fact that the American horses cost the company as much as the native. The director of the company's horse supply has practically concluded that his company will purchase no more Americans.

Mr. Vidal, the merchant from whom the omnibus company referred to above purchased its American horses, says:

> I regard the American draft horses as having no future in France. Personally I find no profit in their importation, but I am considering an importation of carriage horses (chevaux de luxe). In comparison with the Percheron or Boulonnais the American draft horse is not pleasing in appearance, moreover he is ill broken. Among the better carriage horses we occasionally find some really brilliant in harness. France being still fortunate in the possession of good draft horses, the American draft horse has with us nothing to expect. The principal traffic with these horses is in Belgium, and they are generally destined for the market of Metz and Strasbourg; nevertheless, a merchant of Paris, Mr. Levy, jr., proposes to undertake an experiment on a large scale, having purchased at Antwerp large grounds upon which he proposes to establish a depot for American draft horses with a view to introducing them throughout France.

Mr. Vidal does not believe in the success of this effort. He gives the prices of these horses as $80 to $100 in America and $150 to $170 delivered in Paris; $180 is all that the omnibus company paid for theirs. "It is an error," said Mr. Vidal, "to imagine the prices of horses in America to be so low. Some years ago, undoubtedly, the price

fell very low; to-day that has changed, and the advent in the United States of an increasing number of purchasers for the European market has caused breeders to raise their prices; moreover, a good horse in America always has its value. For good carriage horses, when they are stylish and showy, we pay $240 to $280 apiece on the spot. Such as are purchased for from $40 to $60 are plugs, which can only be sold in lots. I repeat that there is no money for us dealers in the common horses. The expense of bringing them over is too great. Note this: The American draft horse in no sense competes with the native. The fact is, French horses over 4 years old are not in the market; when we come across any we never let them slip. Prices in France have not been hurt by American importations. Never have good French horses been as dear as during the past three years. The American horses came in opportunely, at a time when French horses 5 or 6 years of age adapted to saddle or harness were not to be had."

Mr. Vidal thus summarizes the cost of transportation:

One must take a week to get together a shipment of horses, during which time the first comers must be cared for and fed. Then there is often delay waiting for a suitable vessel. Boats possessing the necessary requirements are not yet too numerous. Aboard ship there is feed to provide; also medicine, grooms in attendance, and a veterinarian. These items all cost money. For loading and unloading, and putting on the steam cars on arrival, help must be employed. I sum up expenses, then, as follows: Steamer charges, $30; duty, $6; dock charges, $4; insurance at 5 per cent on $200, average, $10; incidental expenses, a minimum of $30; total, $80.

Then there are losses through accidents, and the horses always arrive much fatigued and need several weeks' rest to get into condition.

Mr. Vidal purchases all his horses in Chicago and ships them via Antwerp.

In an interview with Mr. Blanc, in charge of the line service of the General Cab Company, we obtained the following:

There is a wide choice in the purchase of American horses. Good ones are rare, but among them are some really choice animals, the results of atavism on the side of the European sires. This company has bought Americans only during the last three years, and then in small numbers—this year 450. In all, we have now between 700 and 800. Out of a total of 13,500 horses, we have of foreign stock 2,000 Hungarian, 1,200 Danish, and, as above stated, 700 to 800 Americans. We find the Americans badly broken, and many are rejected on this account; others are ill mated owing to their bad appearance. As a result of careful selection, we have some very good subjects, lacking the tone and action of some of our Percherons, but less dainty and adapting themselves better to economical rations. The Cab Company does not depend upon the American horse as an important addition, owing to its lack of the uniformity of type which the company desires; it is accepted rather as a makeshift. For a horse with style, suitable for the better class of livery service, the Hungarian offers merit at a lower price. He can be had for about $160, while an exceptionally good American is quoted from $240 to $280. It is to be observed also that American horses sold at the public sales of Paris are seldom perfectly matched.

THE AMERICAN HORSE TRADE OF GREAT BRITAIN.

[Extract from the report of Mr. Walter Wellman, dated London, October 15, 1897.]

The import of American horses began to attract attention in Great Britain about ten years ago. At that period the trade was largely confined to carriage horses, which were not, however, imported in such numbers as to excite any particular fear among British breeders. The decade ends with credit to the American breeder of having almost paralyzed horse breeding among farmers in England and Scotland, and having become so menacing to breeders across the Irish Sea as to have attracted considerable attention from the recent Royal Commission on Horse Breeding in Ireland.

In the majority report of that commission occur these passages:

While the prices given high-class horses, whether suitable for the race course, the hunting field, or for harness, have fully maintained themselves, it has been clearly proved to us that the price of inferior horses has gone down very largely of late years. This decrease, estimated at from 25 to 40 per cent, is attributed to the large and increasing importation of horses from America, and in part to the introduction of bicycles, tram cars, and other means of locomotion.

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We would here call attention to the large and increasing importation from America into the United Kingdom of general utility and middle-class harness horses, and the great reduction in freight, which will obviously tend to produce a further increase.

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A dealer informed us that whereas seven years ago he paid £12 a horse for carriage from New York to Liverpool, he paid last year only £3 10s., "and in a better ship."

In view of such competition, independently of other considerations, we fail to see how it is possible for the smaller farmers of the west of Ireland to rear and sell horses of this description at a profit.

Statistics furnished by the board of trade sharply outline the story. The numbers and values of horses imported from all countries into Great Britain during the period from January 1, 1891, to December 31, 1896, are as follows:

Imports from all countries.

[Year ending December 31.]

Year.	Number of animals.	Value.
1891	21,672	£432,268
1892	20,994	425,401
1893	13,719	376,954
1894	22,866	548,058
1895	34,092	921,490
1896	40,677	1,027,736
Total	174,020	3,731,907

The rapid increase in numbers since 1893 has had the effect, it is alleged, of so discouraging the British farmer that he largely abandoned breeding. It will be remarked from these figures that while the trade was increasing in size some effort was consistently made to improve the quality of the horse obliged to compete with animals of a higher grade—the average declared value of the horses imported in 1891 being £19 18s. 1d.; the average declared value of the animals imported in 1896 was £25 5s. 3d.

During the last two years (1895–1896) the horses imported from the United States and Canada together amounted to two-thirds of the horses imported into Great Britain. For the reason that they are both regarded as "American horses," only in rare instances is the distinction between the United States and Canada, as a place of origin, known to users. I include the figures for the Dominion of Canada in my next table, as set forth by the board of trade.

Imports from America, compared with total number imported.

Year. *a*	Total imported.	From Canada.	From United States.
1891	21,672	1,058	590
1892	20,994	1,745	1,076
1893	13,719	1,815	1,319
1894	22,866	5,424	4,843
1895	34,092	12,903	10,351
1896	40,677	11,852	17,930
Total	174,020	34,797	36,109

a The fact that the above table is made for calendar years, while the table of exports of horses from the United States is made for fiscal years ending June 30, will explain the apparent discrepancy between the figures contained in the two tables.

It will be noticed that up to the close of 1895 Canada held first place in the trade in "American" horses in Great Britain. This premiership during the last three years was, however, only numerical, the United States supplying horses of better grade, which of necessity fetched better prices. This is shown by the figures—again those of the board of trade:

Comparative values, United States and Canadian horses.

Year.	From—	Number of horses.	Total value.	Average value. £	s.	d.
1894	Canada	5,424	£181,079	33	7	8
	United States	4,843	178,148	38	16	1
1895	Canada	12,903	369,157	28	15	5
	United States	10,351	345,375	33	7	3
1896	Canada	11,852	318,639	26	17	8
	United States	17,930	532,623	30	4	8

Before referring to the present conditions of the trade it will be as well to consult one more contribution from the board of trade—the details of last year's American imports:

Classes of imports, 1896.

Place of origin.	Stallions.		Mares.		Geldings.	
	Number.	Value.	Number.	Value.	Number.	Value.
Canada	28	£765	3,797	£91,458	8,027	£226,416
United States	45	7,245	7,602	225,714	10,193	299,664

As far as can be ascertained with any approach to accuracy, of the total number (40,677) of horses imported into Great Britain in 1896 a little over 7,000 were reexported, mainly to the Continent. Of these about 1,000 are presumed by dealers to have been animals of United States origin.

EFFECT OF A SEA VOYAGE.

Horses are undoubtedly affected as are human beings by a sea voyage—some improve by it, the majority are upset by it. And to those upset by the motion the longer the voyage the more lasting the deterioration. For this reason the swifter the vessel the better for the horse. Further, it is common to find a large number of cattle in steamers conveying horses, in which case it is safe to assume the ventilation is bad, with possibly serious effects on the health of the horse. While of late years there has been a great improvement in the quality and temper of the attendants hired to look after horses en route, there still remains something to be accomplished in this direction. The more nearly a horse is treated like a saloon passenger—that is, with unremitting attention—the better he will come out of his Atlantic ordeal. Some further improvement also seems desirable in regard to the ship stall. While the headboard as at present used is an absolute necessity, some device is imperative whereby the animal will not rub off a part of his mane in feeding, as is now too often the case.

These improvements in transportation arrangements are all the more necessary in view of the fact that American horses brought to England are invariably more or less affected by the change of climate, water, and food. The more nearly thoroughbred the greater the effect seems to be in this connection. The English trainers of American race horses at Newmarket informed me that they could not expect to get out the best that was in an American horse under a year. In the case of carriage and draft horses from two weeks to six months was the period mentioned before the American horse could be considered acclimatized. It becomes imperative, therefore, in view of facts of this character, that the voyage hither should be made under

such conditions as reduce to a minimum the demoralizing influences of confinement on shipboard.

ENGLISH OPINIONS.

I have not thought it necessary to append all the interviews I have had. I submit only those which most clearly support the general trend of all English criticism while embodying succinctly the opinion of English experts.

ARMY HORSES.

Maj. Gen. C. A. Gore, inspector-general of remounts, said:

I buy about 2,000 remounts yearly. Between 4 and 5 per cent of these horses are Canadian or American. We do not distinguish between the two in our records, but the majority of such purchases are Canadian. The Canadian is the better horse for army purposes. The principal fault I have to find with the American horse from my standpoint is his shape. He is too long in the body; his tail grows too low down on his body; it should be nearer his back. The horse is thickest through at the hips; he should be thickest through at the buttocks. His hocks, as they should not, curl in, and his legs are too thin. He is, from an army standpoint, "gawky" looking. He is ragged, though docile tempered and better trained than Irish or Hungarian horses. He seems to deteriorate on the voyage over; anyway he is little good until he has been here a year. Even then he does not furnish well—never gets his ribs cut round. Further, he does not last well in the service. We have some in the artillery, none in our cavalry.

I have been buying a few every year for some years, though not so many since 1895, as the investment was not a good one. Canadian horses are hardier, better able to go without forage when doing severe picket duty than American horses. By far the best of the American horses we get come from Kentucky, where, I believe, they are bred in a limestone country. I believe with the Irish breeders that a horse has little chance of being a good horse that is not bred on a limestone soil, for he will be deficient in bone.

We have no prejudice against American horses. We buy anywhere, the bulk of all our horses coming from Ireland. For service in South Africa we bought in South America; for the Egyptian campaign we bought horses in Hungary. We shall be glad to purchase American horses if the breeders will send in the proper animals—a short, low horse, thickset, strong flanks, good high tail, shoulders not so necessary as buttocks, ribs founded out so as to furnish well, and better-shaped legs—not so thin and straight, not incurving. Horses with these characteristics and with more stamina, if sent here, would find a ready market for army purposes.

DRAFT HORSES.

Mr. Daniel Duff, general manager of the London Road Car Company, Limited, who buys all the horses used by his company, said:

We purchase about 1,000 horses a year, almost exclusively American or Canadian. We are obliged to depend on America for our supply, as we can not any longer get English, Scotch, or Irish horses in sufficient numbers at a possible price. We find American horses get into their leather quicker than Irish or Scotch, and are better bred and tempered.

We began buying about five years ago and have much improved our stud by so doing; but strangely enough—whether owing to the climate or lack of stamina in the breed I am unable to say—we never before reached so poor an average life for our horses as during the first six months of this year, namely, three years and

nine months. This is six months shorter than at previous period in the life of our omnibus horses. Our American horses cost from £26 to £36, and partly because the voyage seems to upset them cost a further £10 before they can be considered fit for the heavy work of our streets.

The Irish horses are the most delicate we get. They seem to be underfed or poorly fed, and they can not stand our rich feeding.

American horses of this class seem to have more stock or bone. I never purchase one under 8½ inches at the smallest part above the fetlocks. Yet, there is the fact, despite these advantages, of their shorter life at our hard work. American breeders should if possible get more stamina in the strain. We do not like the Percheron strain; we never buy them; they are unfitted for our work.

Mr. R. T. Kingham, secretary to the London General Omnibus Company, Limited, said:

We have 14,000 horses, whose average life in the company's service is five years. We buy Canadian horses at an average price of about £30. The voyage undoubtedly affects them, and it usually requires an expenditure of £8 to £10 before the animal is fit for the company's work.

Among horse auctioneers the same general run of opinions exists. The manager at Aldridge's horse repository said:

Opinion among those who buy American horses here, and many hundreds pass our hammer every year, is divided. Some of our customers say they never again will buy American horses—their legs and feet can not stand the rough work of English towns and cities; others are entirely satisfied. I am satisfied, after several years' experience, however, that American horses are hardly given a fair show. They are undeniably affected by the voyage. On the average they are sold here within a week after being landed. If dealers took more time to get them accustomed to this climate, to English corn and water, the horses would bring better prices, and I don't think you would hear many complaints. I know a great many cases where American horses have been kept for three or four months, their tails docked and manes combed, etc., and then sold at high prices as English or Irish, and nobody but the sellers knew they were American. If I were to give any advice to American shippers I should say: Do not send so many misfits to London; send better quality animals. The result will be better prices and a sounder trade. And do not dispose of the horse so quickly on landing him; delay to put him into better condition will more than return what it costs.

CARRIAGE HORSES.

The above expert opinions refer to army and draft horses. The principal class remaining is that of carriage horses. On this point I sought the opinion, among others, of Mr. Reekie, manager to Messrs. Withers & Co., Limited, the leading fashionable job masters of London. Mr. Reekie said:

The chief defect of American horses is their lack of action. If American breeders want to breed for profit in this market let them breed from a good trotting—not a racing stallion—long, level, and with action. Whatever they do let them breed from action, and never from a horse with drooping quarters. On no account should they breed from Percherons for this market; the get of the Percheron, as sent here from the United States, is always soft.

Vanners, bus, and tram horses are, of course, cheap. A good American carriage horse will fetch from £90 to £110. We have over and over again paid these prices

since we began dealing in American horses, in 1894. For four years we kept an agent in the United States, but gave it up, as the animals were disappointing. The best horses we get come from Michigan—not Kentucky. The Canadian carriage horses are not as good as the American; they are still more deficient from our standpoint. The American breeders have almost ruined the English horse breeders. English farmers formerly got £90 or over for a good carriage horse, but American horses coming in at £60 to £65 competed so disastrously that the English farmer has practically given up breeding. Let me repeat and emphasize, and strongly as is possible, "*Breed from action*," and for carriage purposes breed from an American trotter; the get of English hackneys crossed with American animals is not nearly so good as the pure American-bred horse. First, last, and all the time, breed from action if you breed for profit.

The demoralizing effects of the voyage to England reported by Messrs. Kingham, Duff, and others prompted an inquiry concerning the methods of transportation of American horses coming to this country. Mr. Thomas L. Field, of Messrs. Williams, Forrey & Field, Limited, managing owners of the Atlantic Transport Line, said:

Of the 17,000-odd horses brought to Great Britain in 1896, we brought quite 10,000. When we found the horse trade assuming respectable dimensions, I made a special investigation and found it was suffering from mismanagement. Shippers did not really know what it cost to send a horse to London. They employed men who were willing to take care of the horses for the sake of a voyage to London and back. The horses had no expert care, generally were neglected, as these amateur stablemen were seasick. I introduced a rate which provides for expert attention en route by a properly qualified veterinarian and trained stablemen, who are also good sailors. The rates I quote include insurance during the passage and for ten days after landing. This system saves money to shippers and enables them to export the animals at a profit. In regard to the statement that horses brought from the United States to this country suffer some sort of demoralization, I do not think that is true. I have often seen horses landed in London in very much better condition than when they went aboard the vessel. Of course, if the seeds of pneumonia are implanted before the animal comes on board in America it will develop on shipboard or after landing; but in my experience it is much more often the other way—the horse is bettered by the voyage to this country. I have seen hundreds of American horses go direct from the ship to their owners' work, being perfectly fit.

HORSE TRADE WITH GREAT BRITAIN.

[Extract from report of Dr. W. H. Wray, Inspector United States Bureau of Animal Industry, London, England.]

Numbers and values of horses imported into Great Britain.

Country.	1894.		1895.		1896.	
	Number.	Value.	Number.	Value.	Number.	Value.
Russia	3,653	£34,686	2,427	£27,104	3,198	£33,445
Denmark	1,802	13,860	2,202	15,898	2,567	21,686
Germany	4,687	50,476	3,765	45,236	3,025	33,159
Holland	1,129	45,591	1,285	50,718	923	35,084
Belgium	258	10,168	148	4,805	179	7,073
France	315	17,143	250	19,356	242	11,931
United States	4,843	178,148	10,351	345,375	17,930	532,623
Argentine Republic	525	9,920	491	11,632	558	11,947
Canada	5,425	181,079	12,903	369,157	11,852	318,639

TRAM HORSE FROM THE UNITED STATES.

Color, brown; age, 6 years; height, 16½ hands; girth, 79 inches; measurement under knee, 8½ inches; weight, 1,250 pounds.

FIG. 1.—Front view.

FIG. 2.—Rear view.

TRAM HORSE FROM THE UNITED STATES.

The trade in horses from the United States to Great Britain is one that should be upheld and fostered by the Department and the breeders of the United States in every possible manner, especially in breeding for the English market and in securing proper accommodation on board the steamers that ply between the United States and Great Britain, and above all in being careful that no horse affected with any disease, contagious or otherwise, be allowed shipment.

I am well within the limit when I say there are 600,000 horses in daily use on the streets of London, whose lives of usefulness average between 3 and 7 years, according to their class of work.

The London Tramways Company has over 4,000 head of horses, three-fourths of which are from the United States and Canada. These horses average 14 miles per day in their daily work, must be from 5 to 7 years old, 15¼ to 15½ hands high, weigh from 1,200 to 1,300 pounds, be compactly built, and have plenty of bone and muscle, with good action. For a horse of this type the London Tramways Company has a set price of £35 sterling, or, approximately, a little over $170, per head.

Every year one-seventh of the horses of the London Tramways Company are taken out of their stables as unfit for service and sold at an average of £11, or $53.50, per head.

The average weekly consumption of grain by the horses of the London Tramways Company is 200 tons; they also consume a weekly average of 180 tons of hay.

I have the photographs of a typical tramway horse belonging to this company, which was bred in the United States and shipped to London; three pictures (Plates I and II) of the same horse in different positions, in order to show side, fore and hind quarters. The London Tramways Company will not purchase a Percheron-bred horse at any price, and prefers dark-colored horses.

The London Road Car Company, which runs omnibuses through the streets of London, has 4,400 horses in its stables, which average 3½ to 4½ years of usefulness. These horses also travel 14 miles per day in their daily work, and consume about 240 tons of grain and 190 tons of hay per week. This company purchased 1,000 head of horses annually for the last three years, mostly from the United States and Canada. The horses which this company desires should be from 5 to 7 years old, 15½ to 16 hands high, with a girth measurement of 76 to 78 inches, and measure around the leg just below the knee 8½ to 9 inches, with plenty of bone and muscle. Such a class of horses will sell readily for $175 to $185 per head, and very often for $200.

The London General Omnibus Company has 9,000 head of horses, some of which come from the United States and Canada. These horses average 16 miles per day and last the company 6 or 7 years, are 15½ to 16 hands high, weigh about 1,350 pounds, and measure from 78 to 79 inches around the girth and 9¼ to 9½ inches around the leg just

below the knee. This class of horses will average $185 to $225 in the London market.

Balls Brothers are proprietors of a large omnibus line that runs from London Bridge to Streatham Common and from Brixton Station to Oxford Circus, etc. They keep 700 horses, which will average 3 years of usefulness. These horses are 15¾ to 16 hands high, weigh 1,600 to 1,700 pounds, are 5 to 8 years old, and measure about 88 inches around the girth, and 9¼ inches around the leg just below the knee, with plenty of bone and muscle. This firm purchases quite a number of horses that come from the United States and Canada.

Fig. 1, Plate III, represents a horse known in the London market as a trotting "vanner." In America we would call such a horse useful for a grocery or a light delivery wagon. This horse is 16½ hands high, measures 78 inches around the girth and 7½ inches around the leg just below the knee, is 6 years old, and has very good action. He was shipped from Boston to London, and was sold at auction for $128. Fig. 2, Plate III, represents a horse that is used as a cavalry or army remount horse. He is from the United States, and sold for $140 at auction. Figs. 1 and 2, Plate IV, are those of heavy van or draft horses. This is the class of horses that is in great demand in the London market. Plate V represents carriage horses that make a very good match team, are of the same size and age, and have plenty of style, the team together being worth a great deal more than when purchased singly. Mr. Johnson, the owner, has refused 150 guineas for the team. Pate VI represents a draft horse that has been at work in the Deptford Cattle Market for the last two years, and is a magnificent specimen of its kind.

For a heavy draft horse the Clydesdale and English shire horses take precedence of all others, as they are compactly built, with plenty of bone and muscle, and have good feet. The English idea that everything to be strong must be heavy will apply to horses as well as to wagons and other things.

The Cleveland bay horse makes a very good heavy carriage horse. I have often thought that some of our large size Wilkes-bred stallions crossed on a Cleveland bay mare would make an excellent coach or carriage horse, but have never seen the experiment tried.

The horses from the United States are shipped from the ports of New York and Boston to the ports of London, Liverpool, and Glasgow, and quite a large number are transshipped at London for the ports of Antwerp and Havre.

The ocean rates on horses from New York and Boston are from $25 to $30 per head, including feed and attendance, one steamship line carrying horses from New York to London at $27.50 per head, including feed, attendance, insurance during the voyage and for ten days after landing, and dock charges.

FIG. 1.—BLACK TROTTING "VANNER."

Six years old, 16¼ hands high, 78 inches around girth, and 7¼ inches around leg just below the knee.

FIG. 2.—ARMY HORSE, NOT A VERY GOOD TYPE.

Six years old, 15.3 hands high, 73 inches around girth, 8¼ inches around leg just below the knee.

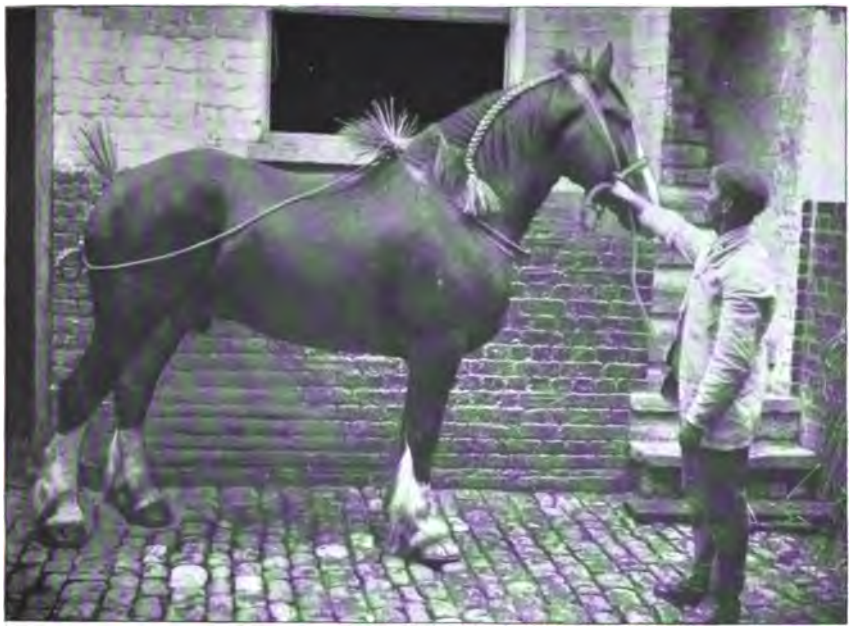


FIG. 1.—HEAVY VAN HORSE.

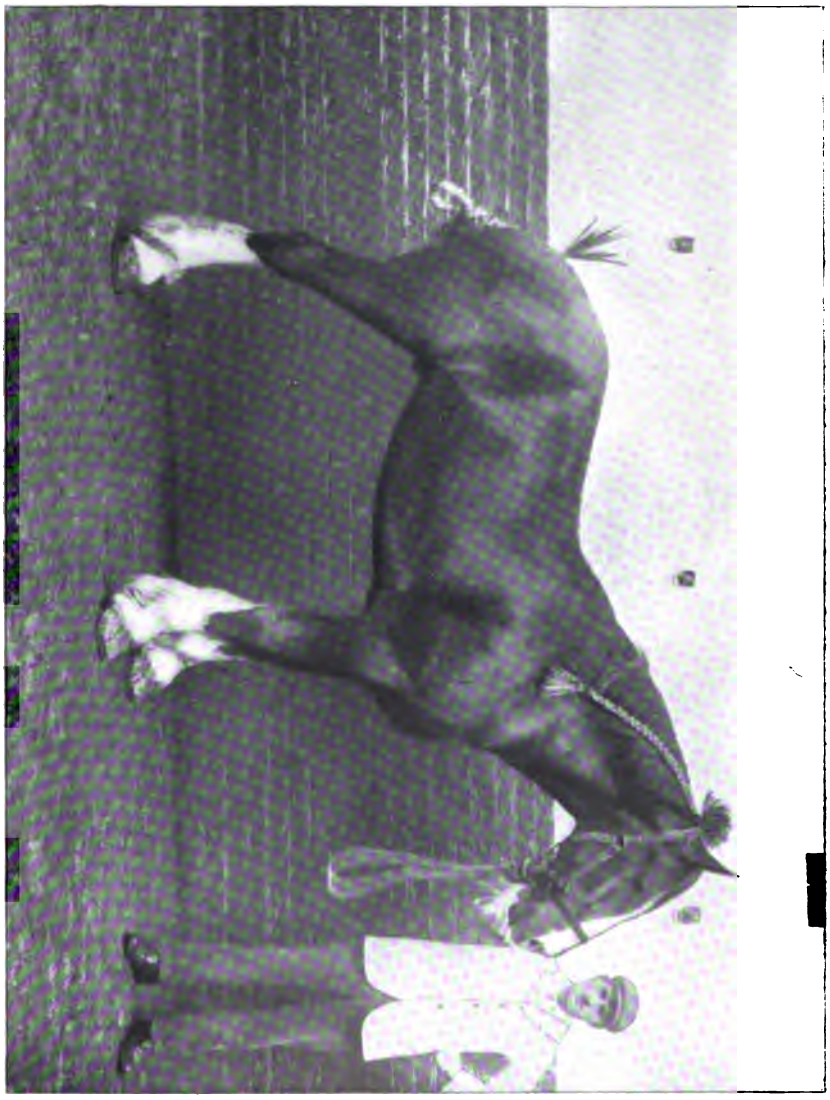
Four years old; shipped from Boston; sold for 50 guineas; height, 16¼ hands, girth, 98 inches; leg just below knee, 10 inches.

FIG. 2.—HEAVY VAN HORSE.

Six years old; shipped from Boston; sold for 60 guineas; height, 16¼ hands; girth, 99 inches; leg just below the knee, 10½ inches.

CARRIAGE HORSES SHIPPED FROM THE UNITED STATES.

Seven years old, 90 inches girth, 9 inches around leg just below knee; have plenty of knee action and are well bred; sold at auction for 45 guineas apiece; owned by W. Bruce Johnson and driven tandem, and as a team to the pole.



DARK BAY GELDING, SHIPPED FROM BOSTON.

Seven years old, 17 hands high, 84 inches girth, and 12 inches around leg just below knee; sold by Messrs. Pritchard & Moore Bros. for 85 guineas.

Some people here are prejudiced a little against the American and Canadian horses, saying they invariably get sick and it takes a long while for them to become acclimated, while other people say they have no trouble whatever with them. On the whole, the horses from the United States are landed here in very good condition, with the exception of swollen ankles, due to standing continually during the voyage, but this swelling soon subsides when the horse is put to work. If the horses from the United States are properly looked after during the voyage and after arrival, there is no reason why they should become sick any more than the native horses when they are sold and shipped from place to place in their own country.

The large firms in London who use American horses are well pleased with them and purchase a great many. Any good, sound, well-broken, young horse with plenty of bone and muscle and compactly built, of any class or type, will sell well in London market; but scrubs and badly broken horses are absolutely useless.

The horses that are imported from Belgium are mostly black stallions, known as the Flanders horse, which are used throughout England for funeral purposes; are quite a good looking and showy horse, very quiet, but with very little stamina and usually bad feet. These horses average from $185 to $200 per head.

Germany, Holland, and France send a mixed lot of horses to England, of all grades and kinds, but France sends quite a number of good large-size carriage horses; also a good army horse. The horses from Russia and Denmark are mostly ponies, some of them stout little fellows about 13 to 14 hands high, that will move along at a rapid rate with a load twice their own weight. The prices of these ponies range all the way from $25 to $250, according to form and speed.

The Argentine horses are, as a rule, like the Western pony or cayuse of the United States, very wild and of little use except for buck-jumping exhibitions, but, like the cattle from that country, the breed is being improved very rapidly. These horses will bring from $70 to $100 per head in the London market, the latter price being for the best bred horses.

AMERICAN HORSES IN DENMARK.

[Report of Robert J. Kirk, United States Consul at Copenhagen.]

The American horse appears to be gradually finding a market in one after the other of the European countries. In January of this year a dealer imported, as an experiment, about fifteen draft horses. They were easily sold at prices varying from $150 to $350, one fine pair of chestnuts bringing $900. A second shipment of twenty horses

is now being advertised, and I am informed the horses are selling readily at $147 to $230. These are also draft horses. It does not appear that any saddle horses have yet been offered for sale as such, though some four or five of the first lot mentioned above have since been broken to the saddle.

American horses for this market should not be under 15 hands in height and should be adapted for draft, unless otherwise ordered. Denmark imports annually from 5,000 to 6,000 horses, mostly from Russia and Finland, ranging from 12½ to 14 hands. They are much in demand by bakers, milkmen, truckmen, and others, whose business requires light, active horses and light vehicles.

Work horses, omnibus, car, and cab horses are almost exclusively of domestic origin. For this class of work and for heavy draft generally there is probably no better animal than the Jutland horse, a heavy, powerful beast. For victorias, landaus, and carriages German horses are mostly used, there being also some Jutland horses.

Saddle horses vary according to individual taste, English, German, and Swedish predominating.

Denmark annually exports from 12,000 to 15,000 horses of her own raising to the Continent, many of them finding their way to France, where they are used as cab horses. In 1896 there were imported 6,115 horses, valued at $491,646, or about $80 per head. There were exported for the same period 15,959 horses, valued at $2,738,564, or about $172 per head. That the native Danish horse is a fine animal and commands good prices these figures prove beyond a question.

Hamburg would, of course, be the port of entry in shipping horses to Denmark. No papers are necessary for landing horses in Denmark beyond the health certificate of a veterinary surgeon at the port of shipment, properly attested by a Danish consul. They are admitted free of duty.

I have recently had occasion to correspond with the recruiting officers of the Danish army as to the adaptability of the American-bred horse for use in the army. The officer in charge of this branch of the service replies that he has not seen sufficient American horses to form a decided opinion, but he is under the impression, from what he has seen, that they are better suited for draft than for cavalry horses. Draft horses for the army are recruited exclusively in Denmark, and it is safe to say they always will be. Cavalry horses, on the contrary, are bought principally in Germany, and latterly, also, in England.

Some of the necessary qualifications of horses destined for the cavalry are as follows: They must be blooded mares or geldings, suitable in build and figure for cavalry, well gaited, kind in disposition, and strong in limb. Dapple grays and yellow and horses with prominent marks (blaze face, wall-eye, etc.) are never accepted. The recruiting commission buys horses as a rule twice a year—in the fall

and spring. In the fall, the age of the horse must be 4½ to 6 years, and in the spring 5 to 7 years. They must measure from 15 to 15½ hands in height if they have not completed their sixth year. After that age, they must be 15¾ to 16 hands high.

Prices vary according to quality and market conditions. The last English and Irish horses were bought at an average price of £37 to £38 ($180 to $185), delivered in Parkestone. For other horses the prices at present are: For officers' horses, 830 kroners ($221.40), and for the ordinary cavalry horse, 760 kroners ($203.68), at the place of purchase. The purchases do not exceed 150 animals per year. Horses are bought only after the inspection of the commission, one of whom is a veterinary surgeon.

American dealers who desire to offer cavalry horses to the recruiting commission would probably find it more convenient to do so through dealers in England, Ireland, or Germany when the commission makes its semiannual visits to these countries. The address of the recruiting commission is "Formand for Remontekommissionen, 12 Stormgade, Copenhagen." If, at the time of these visits of the commission, any local dealer should be prepared to offer for inspection American horses answering in qualifications to the outlines given above, I am sure the commission would buy such horses as readily as the German or English horses. At least one of the commission, as I am informed, is very favorably impressed with the American horse for cavalry. I give below the names and addresses of some of the best-known horse dealers in Copenhagen for the benefit of those exporters who desire to try this market. The commercial ratings of any of these firms can be obtained by writing to P. V. Fornais's International Bureau, 16 Gl. Torv, Copenhagen. The dealers are: H. P. Bekker, Baldersgade 6; F. A. Benthein, Petersens Passage 9 B; I. Bröndum, Petersen's Passage 16 A; P. C. Gjertsen, Viktoriagade 6; I. Hansen, Gasvarksvri 33; C. C. Hecht, Vesterbrogade 9; N. Henriksen, N. Farimagsgade 39; N. Jörgensen, Gasvarksvri 14; Jörgensen J, Falkonerallen 12; F. H. Möinichen, Vesterbrogade 12; H. P. Rasmussen, Vesterbrogade 35.

THE DEMAND FOR AND KIND OF HORSES SUITED FOR EUROPEAN USES AND THE PRESENT STATUS OF THE HORSE TRADE IN DIFFERENT COUNTRIES.

[Report of Mr. Charles E. Stubbs, Fairfield, Iowa.]

It not my purpose in this report to treat of the different kinds of horses, their qualities and uses, nor compare their relative merits, only so far as these questions may arise in discussing the salient features of the subject treated in this report.

In considering the situation in the United Kingdom one is naturally led into fields of investigation not directly connected with the

object of inquiry, as the English people are great lovers of horses and have more varieties, perhaps, than any other nation. Presuming that the breeders in the United States are familiar with the markets and demand for horses in their country, I shall devote no time to this feature of the horse business. What we here want to know is, Can the American breeder raise horses for export profitably; and if so, what are the kinds most in demand and how are they to be produced? To the first part of the question I unhesitatingly answer "Yes," and in explanation of the latter portions I respectfully submit the result of my investigations.

IN THE UNITED KINGDOM.

Great Britain properly deserves the first consideration, not only because we are now sending her more horses than any other country, but from the further fact that the demands for horses in England are so varied that when one has carefully considered the situation there a fair idea of the great European horse markets has been obtained, as in one phase of the subject or another one meets in England with almost every condition existing elsewhere.

It must be conceded that the average English breeder more fully appreciates the fact than do our American breeders that a certain type and kind of horse is better suited than some other type for certain purposes, and that to produce a particular type certain established and well-defined rules of breeding must be observed.

There is no country in the world where the rule "good horses sell well and poor ones badly" applies with more force than in England. Here the purchaser pays for the actual wear and utility of the horse he buys, and it is astonishing how experience has taught him to select a horse that will last six years on the London pavements to the exclusion of one that would only wear half as long. Of course, as we ascend the scale from that common plane where the great majority of horses find their proper positions and approach that extreme where perfection is found to a much higher degree, actual service in some cases is only one of the considerations, and appearance, action, and style come in for their equal share of praise from the purchaser.

Without attempting to comment upon the different classifications of horses in England, I will pass on to the consideration of those types which, in my judgment, the breeders of the United States would find it most profitable to raise, with England in view as a future market. It will be conceded, I believe, that, to a certain extent, it is always advisable to cater to the pronounced likes of our best customers, and that we may at the start know who our customers are, I here insert a table showing the number of horses we have exported during the last five years and the countries which received them:

Number of horses exported during five years ending June 30, 1896.

Country.	1892.	1893.	1894.	1895.	1896.	Average.	
							Per cent.
Belgium	21	.....	77	300	1,134	306	3
France	.....	2	.....	511	397	182	1.8
Germany	28	33	12	1,324	3,686	1,017	10.1
United Kingdom	467	564	1,355	5,834	12,022	4,049	40
Canada	1,596	1,600	2,639	4,493	5,683	3,202	31.7
Central America	149	37	244	202	542	235	2.3
Mexico	420	457	507	855	987	645	6.4
Cuba	64	42	99	67	.....	54	.5
Hawaii	158	37	46	109	129	96	1
Other countries	323	195	267	289	546	324	3.2
Total	3,226	2,967	5,246	13,984	25,126	10,110	100

This table shows that our export trade in horses has constantly and, at certain periods, rapidly increased since 1892, and that the United Kingdom has received 40 per cent of the entire number exported.

Through the courtesy of our Treasury Department, I am able to state that our export trade in horses for the fiscal year June 30, 1896, to June 30, 1897, far exceeds all past records, and that while the general exports increased, the number England took from us also increased, until within the last year she stands credited with nearly 50 per cent of our entire exportation.

Number and value of horses exported from the United States to the United Kingdom, Germany, Belgium, and France during the fiscal year ended June 30, 1897, according to the official returns received by the United States Treasury Department.

Countries to which exported.	Number.	Value.
United Kingdom	19,350	$2,579,736
Germany	4,897	822,250
Belgium	4,213	465,365
France	23	8,500
All other countries	11,049	893,414
Total	39,532	4,769,265

Those figures prove that we are rapidly increasing our horse trade with the United Kingdom and Europe, and the logical inference is that if we can improve our horses to more nearly conform to the requirements of our customers we can sell them a larger number and at better prices, unless the demand is limited and the present price not subject to increase.

To arrive at a correct analysis of this proposition, we would naturally inquire, Where and in what capacity are the horses used which we now send abroad? This question, though pertinent, is quite difficult to answer; but to do so would at once show us whether the horses we are now exporting are put to uses for which high prices can be paid, and whether there is not a higher position which it is possible

for our horses to attain. I shall take these matters up in their order, and, from the most reliable information obtainable, not only show how most of our American horses are used in England, but what they sell for and what other and more valuable services they might perform, if, as the Englishman says, "they showed a bit more breedin'."

I shall first consider the cheapest horse used in London for purposes which our American horses could fill, and then proceed to consider, from this starting point, horses used to perform more valuable duties, and, so far as possible, apply their uses to the horses we now have, and what, in my judgment, we might produce in the United States.

The hansom or cab horse used in the large cities of Great Britain is a small animal, standing about 15 hands 2 inches high, and weighing from 950 to 1,050 pounds. He may be any color, but he must have good feet, clean limbs, good joints, and a short, strong back. He is always preferred on short legs, and is valuable to his master in proportion to the years of service he can give him. This horse resembles a large portion of the American horses, but as a rule he is a little better and stronger built and on shorter legs. He comes chiefly from Ireland, where he can be produced cheaply, and his great endurance has produced among cabmen in London a prejudice in his favor. That we have many good cab horses in America can not be denied, and occasionally, being of the right conformation, they are used as such in London, but it is the exception and not the rule, as some people suppose. Special inquiry into this matter convinced me that at least 80 per cent of the cab horses of London come from Ireland, and that they are considered the best horses it is now possible to obtain for the purpose; although it was conceded that in a few instances, where American horses of the proper conformation had been used in the cabs, they had been found to be the equal of the Irish horse in every particular.

I am glad to state that no real prejudice exists against the American horse in England for cab or other purposes, and it stands solely on its merits, but a prejudice did exist for some time, caused entirely on account of the exportation of so many very inferior horses.

Our exporters may be excused on the ground that they did not at first know what the English trade demanded. This prejudice is now fast disappearing, as our horses exported to England continue to improve in quality.

I am satisfied America can produce as good a cab horse as Ireland, but it is a trade we do not care for. The aim is not high enough, and the horses are too low in price to be exported at a profit. Ireland is now furnishing them to the cab companies of London at from $95 to $120 per head, which precludes the possibility of the western breeder raising them and saving a profit after paying shipping charges, insur-

ance, etc. To my mind the price paid for these horses answers laconically the inquiry, Why are not more of our American horses found in the cabs of London?

In the city of London alone there are at present about 20,000 cabs, including "four-wheelers," and it requires 2½ horses to each vehicle, making 50,000 cab horses now in use in the metropolis. Their average life is about 3½ years.

Ireland will continue to furnish the cab horses for England, and possibly for France, and we are willing she should do so, as the price will not justify our interference.

There is still another horse which Ireland is famous for and which the English regard higher than any other, and that is the Irish hunter. To show his honesty of opinion, the English gentleman is willing to pay a fabulous price for this horse if it meets his requirements and suits his fancy. I mention the latter horse here only incidentally, and in order to show the two extremes of Ireland's breeding, as I now want to call attention to the fact that between the two horses described she produces nothing that materially affects the sale of American horses in England, and has thus left a space we are particularly prepared to fill. I shall have occasion to mention the hunting horse hereafter, but will here remark that we are not at the present time prepared to produce him, unless in Kentucky and a few of the Southern States and then only occasionally, in form, type, and training, to suit the Englishman.

Having mentioned the horse America does not want to produce for export and the one she can not raise successfully, I now come to consider the animal that fills the space left vacant by Ireland and which lies between the two extremes mentioned.

THE OMNIBUS AND THE COMMERCIAL CARRIAGE AND PRIVATE BUS HORSES.

These are so nearly alike that I shall combine them under one head. It is certain that the large majority of American horses sold in Great Britain are used for above purposes, and the increased importation of them by England is not to be wondered at when we consider the large number in use in the city of London alone.

Since it costs practically the same to ship an inferior horse that it does a superior one, it is evident that the freight charges are proportionately less as the value of the horse increases; hence the bus horse, being a higher priced animal than the cab horse, our people have been given a market for horses which they happen to have on hand at the present time. I say "happen to have," because the type of horse I have in mind was not especially bred for in America.

To meet the requirements of the bus companies, a horse may be of any color but substantially conform to the following description: He must stand 15 hands 2 inches high, and may be 16 hands, but not more. He must be on short legs; for, as the buyer of the largest London com-

pany remarked, "Then he has not far to fall nor far to get up again." The best types weigh about 1,300 pounds and are compactly built, with good feet, that is, a well-shaped foot, with good shell and a high heel, that will keep him off the pavement. Avoid a large flat foot without any heel, for, though good otherwise, a horse with such a foot is of no use on the pavements of a large city. His bone must be heavy and his joints sound. His cannon bone short and his pastern joint straight. He must have strong, thick hips, with a short back and round ribs, and should be built on the "chunky" order. Flat-sided horses with long backs, and that stand on their hind legs like a cow, are of no use in England and of little utility anywhere, except on the farm—avoid them.

The horse I have attempted to describe will always sell for a fair price in England, as there are many uses for which he is wanted besides drawing omnibuses. Thirty years ago this horse was unknown, but is now the medium between the carriage and the heavy cart horse, and sells in London for from $175 to $225, usually at about $200.

It is impossible to mention all the uses to which this horse is put, but to describe some branches of the work which he may be called upon to perform may give the American breeder a better idea of what his conformation should be. The bus, which a team of these horses draw and handle so well upon the slippery pavements of London, is a very heavy machine. Hence the name "heavy machiner" is applied to this horse. A team draws the heavy omnibus, containing, inside and on top, 26 people, at the rate of from 6 to 8 miles per hour. They are always shod, and handle such weighty vehicles, stopping and starting so suddenly, with apparent ease, and seldom slipping or falling. The age at which this horse sells best is 5 years, and being too plain in appearance and too heavy in his action for a high-class carriage horse, he is admirably adapted to the work which he is asked to do in England. Canada is now supplying the English markets with a large number of these horses, and is at the present time our most formidable competitor for this trade.

There is, however, no overproduction of this sort of horses, and there is not likely to be for many years to come. I base my prediction upon the present demand and the general utility of such a horse. I have before me the last semiannual report of the London General Omnibus Company, Limited, and from it I learn that this company now has in daily use 1,100 omnibuses and keeps 14,000 horses. It carries per week, in round numbers, 3,500,000 people. The average working period of their horses is about five years, and when we consider that this is but one of eight public bus lines in the city of London alone, we can form some idea of the immense number of such horses required each year.

The next question which naturally arises in one's mind is, Should we attempt to breed the bus and van horse in the United States to the exclusion of other types, and do the prices paid for these horses

justify such a course? In brief, I answer no, and say unhesitatingly that the horse just described is the lowest in the scale that we should raise, and should by no means be the mark at which we aim.

If we are to breed horses for the greatest profit we must attempt (conditions being favorable) the production of the most valuable horse in general and constant demand, and with this higher object in view we will raise a sufficient number of bus horses and others of mediocre quality. Would it not be foolish for the breeders of the United States to raise, as a matter of choice, horses that will only sell at a moderate price, when by aiming higher they can produce horses worth double as much? In aiming higher they are at least assured of producing the commoner horse, though they fail to accomplish all they had hoped.

Starting with the bus and van horse, as we ascend the scale we come to the private single-cab and brougham horse. These horses are owned by gentlemen for their private use, and are kept by the better class of stables for the use of persons who are willing to pay more than the ordinary cab fares for a "turn-out," which has every appearance of, and is, in one sense of the word, a private carriage. The horse that draws these must have more style and finish than the bus horse I have described. The more style and action he possesses, with sufficient quality and size, the more dignified will be his work, until he passes, by insensible shades, into the fine high-class carriage horse, of which I shall have much to say later on.

In the horse, between the bus and high-class carriage horse, color is not considered unless it be a very bad gray, as their purchasers go on the theory that one color is as good as another, with the above exception; but as we ascend the scale and approach more nearly the high carriage class it will be seen that there are several points to consider which have not yet had our attention.

It is only by the large infusion of draft blood that the United States has increased the size of its horses, and while this one feature—size—was indispensable, the Englishman complains that they are a little too coarse, and asks if we can not give him, in addition to size, a little smoother form. As we become able to do this our horses will advance still further from the bus horse until he becomes an excellent general-purpose horse, of which there is at present time a great scarcity. This horse in England will be used by a gentleman of moderate means, who can only afford to keep one horse in the expensive city of London, and wants this one to be suitable for his single brougham, his cart, and do moderately well under the saddle, besides being of such general utility that he can always sell him at a fair price. This horse is also a good cavalry horse and is one which we are to-day prepared to raise in the United States to better advantage, generally speaking, than any other.

It will be seen that this horse is of good conformation and of much substance and quality. His legs and feet are good and he stands

right on them. His shoulders and hips are good and his back short. This horse is always in demand, and, if 16 hands high, sells for a good price, even if he has but ordinary action. He is not an extravagant type in any particular, but a good "all round horse," and his price in England is regulated, within reasonable bounds, almost entirely by his qualifications.

While this horse is good enough for any market, and many of greatly inferior quality will be produced in trying to raise him, he is not yet as perfect as he should be, as he still lacks some of the qualities which the highest-priced horses must have; but I mention him as we ascend the scale action. At 16 hands high he would fill almost any position between the bus horse and the high-class carriage horse. He will do for the single brougham, and for this purpose would, when well broken, sell for from $250 to $500, the price above $250 depending on his style, action, size, and finish, until we see him merging into the high-class carriage horse. If not sufficiently finished for the brougham, or if his action and style rendered him undesirable for that purpose, he would be called upon to draw the commercial carriage or private omnibus, and for this purpose sell for from $200 to $250. If possessed of poor knee action and only 15 hands 2 inches high, but sound, he would make a first-class cavalry horse and sell at from $150 to $200, according to his quality.

My observations have convinced me that this is the horse our people should have for export; but to be successful the production of this horse should not mark the limit of their ambition. We should aim still higher and attempt to produce the high-class carriage horse, as I shall hereafter attempt to show. It is practically the same horse, with a little more finish and much more style and action than would be required in the one just described.

Before leaving this horse, which in England is suited to so many purposes, and proceeding to discuss the qualities of the high-class carriage horse and the practicability of raising him in the United States, I will devote a little space to the cavalry horses of Great Britain.

CAVALRY HORSES.

Through the courtesy of the war department and the kindness of the inspector-general of remounts in particular, I am able to state that few, if any, American horses have yet been in the English cavalry. Most of the troopers, or cavalry horses, are from 15 hands 2 inches to 16 hands 1 inch high, with short backs, heavy muscles, and strong bones. White and gray are the only colors not used. A square trot is the only gait required, except the gallop, and no pacers, single-footers, or combination saddle horses are used. Each horse is expected to carry with ease and run and jump with from 240 to 280 pounds upon his back. Hence horses with long backs and weak loins will not do at all. The army prefers to purchase horses 5 years old, but many are bought at 4 and kept a year before they are turned over to

the regiments. Mares are used the same as horses. I quote verbatim the answer of the inspector-general of remounts to the following question: "What are the chief faults found in our American horses viewed for cavalry purposes?" Answer: "Big coarse head, long back, flat sides, broad ragged hips, weak loins, long legs, no arms or thighs, hocks very close, enormous feet, generally very flat, and prone to laminitis."

The number of horses purchased annually in the United Kingdom for cavalry and artillery purposes varies from 1,500 to 2,000, and the prices range from $150 to $200. There are now in use for war purposes in Great Britain between 15,000 and 20,000 horses, and no difficulty is experienced in supplying the demand from Ireland each year. Here the best cavalry horse is bred from the hunting horse, which is almost thoroughbred.

There is no duty imposed upon the horses England imports, and the only requirement on landing is that they pass veterinary inspection for contagious diseases.

As the above information comes from the inspector-general of remounts, I have given the same substantially as communicated. Accepting it as correct, we have as yet made little progress in introducing our American horses into English armies, and can with greater ease and certainty supply a larger and more valuable market.

THE HUNTER.

Having spoken of the Irish hunter as a horse which it is not practicable for us to attempt to raise, except, perhaps to a very limited degree, I will add that he is one of the most highly appreciated horses in England. In type he is a thoroughbred, but in size and general conformation the best ones are much larger and stronger than thoroughbreds. No carriage action is required of him, and his jumping and running qualities are the most essential features, besides his power to carry weight. Perhaps the half-bred hunter combines more of the required essentials than any other kind, though upon this point there is a diversity of opinion. They differ from the American thoroughbred in that they have much more strength and are much larger if very valuable. They are often required to carry a rider weighing 250 pounds, and run and jump with him for many hours in succession. These are the qualities that render the hunter valuable, and it is not infrequent that this horse, with all the qualities of the thoroughbred, and in fact almost thoroughbred, stands 16 hands 2 inches to 17 hands high. One of this kind properly trained to follow the hounds often sells to a gentleman of heavy weight who enjoys the chase for $2,000 to $3,000.

Having said that horses of this type, almost or entirely thoroughbred, have been produced of large size, the question, Why is this not the horse to raise high-class carriage horses from? may arise in the minds of some. I will therefore anticipate the question and answer

by saying that this class of horses have poor knee action, which is absolutely indispensable to the high-class coaching horse. Again, let me remark in this connection, that the more blood (by this is meant thoroughbred blood) the sire and dam possess, the less knee action we can expect in the progeny, as it is a well-known fact among breeders of carriage horses that an infusion of thoroughbred blood is always done at the expense of that most important quality—high knee action. Hence it is plain that we can not expect the thoroughbred to contribute much to our coaching breeds.

HIGH-CLASS CARRIAGE HORSES.

I have briefly mentioned a few of the classes of horses used in England and have not recommended raising cab horses for export, because they are too cheap—nor the hunter, because at the present time we can not successfully produce him.

I now come to treat more at length of what is known as high-class coach or carriage horses, which have been only incidentally mentioned heretofore.

In my judgment this is the class of horses we should attempt to raise in the United States for export, with the exception of draft horses, as I shall explain hereafter. In forming this opinion I have taken into consideration every condition existing in the United States at the present time. By far the larger number of our mares are what would be called under size, and while it is true that if bred to a fine draft horse they would raise a horse suitable for bus purposes, it is equally true that many of them, if bred to the right kind of coach stallion, will bring a colt that will sell for almost double as much for the carriage. It is hardly to be expected, that with such a high aim in view, we will always meet with success, as there is such a great difference in the mares of the United States that there must, for a long time at least, be a great difference in their progeny. This existing condition, however, is a potent one in prompting me to advise the breeding of carriage horses. If we succeed in producing the high-class, high-acting coach horse of the proper size, we have the best uniform seller in the world; but failing in this, as we must do in many instances, there are many places for the horses we will raise at greater prices than the bus horses of London can ever bring.

High-class carriage horses are very scarce and always have brought the highest prices in the general markets of the world. They must remain scarce, from the fact that they are becoming more in demand each day as people become more wealthy and require carriages. The horse I have in mind should be from 16 to 17 hands high, with fine style and high action. There is no danger of getting them too large, if the quality can be maintained, but this will be found most difficult.

Horses of this type, in order to bring the highest prices for victoria teams, should be 15 hands 1 inch to 15 hands 3 inches; for landau teams, 15 hands 3 inches to 16 hands 1 inch; for barouche teams, 16

hands 2 inches to 17 hands high. The large ones of the proper quality are the ones most difficult to get, and consequently sell for the highest prices. In breeding, therefore, and especially on our small mares in the United States, only the larger type coaching stallions should be used, but quality and finish must in no instance be sacrificed.

One would naturally suppose that in England, where they have bred horses for so many years, there would be a sufficient supply of high-class carriage horses, but there is not. They are scarcer than any other kind, and the main reasons of this are, first, the great demand for them, and second, the fact that the English have been too eager to breed a hunter—that they have too much blood in their fine looking horses to have action. We can profit by the lesson this teaches, as the majority of our horses as yet have little blood, and by the judicious use of large, high-acting, breedy-looking coach stallions, we should be able to produce a good quality of carriage horses, and at least ones that will fill some of the numerous callings just below this high position. Diligent investigation and research has only confirmed my former opinion in this matter, but I must acknowledge my surprise at the scarcity of fine large carriage horses in England.

On this point I quote from an article which appeared in the Live Stock Journal Almanac, of London, for 1897:

There is not the smallest doubt that England is unable at the present time to supply a quarter of the harness horses required even in London, to say nothing of the other parts of Great Britain. The reason of this is, that breeders do not attempt to do so. Some breed thoroughbreds, others hunters or hackneys, and others heavy Shire horses, but no one seems to try to breed for color, size, height, and trotting power. The consequence is that our great dealers and job masters have to go to Canada, America, Austria, Germany, and France, where they study the above points, to supply an ever-increasing demand. England is essentially a riding-horse producing country, and these are bred by the ordinary farmer with so little thought as to what is required that, if they fail in being a race horse or hunter, they are fit for nothing. One of the greatest, if not the greatest, mistakes made by breeders in England to-day is that they will not breed for size, color, and action. We all know that about a thousand Canadian and American horses come to our shores every week. These are chiefly bay horses, a color much liked and sought after. They are as a rule 16 hands, and have substance and length, by which they "fill" the harness and make valuable animals for town use.

The above must be accepted as good English authority, and conveys some idea of the scarcity of high-class carriage horses in England; but the most exhaustive article on this subject was written recently by Sir Walter Gilbey, one of England's most eminent authorities upon the subject of carriage horses, and which appeared in the Live Stock Journal Almanac for 1898.

Sir Walter says:

It may be accepted as a fact easily demonstrable, that at the present time, as for long past, the best carriage horses in use in England are not home-bred products.

Those beautiful match pairs of carriage horses, standing from 15 hands 2 inches to 16 hands 2 inches, which are among the greatest attractions of our West End streets and fashionable resorts in the London season, are not the English horses so many fondly believe them to be; they are, with few exceptions, importations from the breeding centers of France, Germany, Hungary, Austria, and Holland.

Though the countries specified above are those whence we obtain the bulk of our superior harness horses, our purchases are by no means restricted to these markets. Enterprising London dealers now have in America, Canada, and other countries their agents ever on the outlook for good-looking animals suitable for road work in London and other large cities. The dimensions which have been attained by this trade in foreign horses is proved by the annual returns. Let us see what figures can tell us.

We imported—

In the ten years 1863–1872 ..... 29,131 horses.
In the ten years 1873–1882 ..... 197,092 horses.
In the ten years 1883–1892 ..... 145,763 horses.

The falling off in the importations of the ten years ended in 1892 from the total of the preceding decade is sufficiently great to invite criticism, but it is to be feared we may not lay the flattering unction to our souls that the decrease proves our growing independence of continental supply. The reduced importations of those ten years were due, it can not be doubted, to the depressed condition of trade which prevailed during that period, a depression which would of necessity make itself felt primarily upon indulgence in such luxuries as high-class carriage horses. That this explanation is correct seems proved, to some extent at least, by the returns for the next four years, 1893–1896, which period, as all know, has witnessed distinct commercial revival. In the four years 1893–1896, then, we imported 111,342 horses; and if we maintain the average until the year 1902, to complete the decade, the total for the current period of ten years will be 278,350 horses.

During the last six years, to go no further back, we have paid away £3,731,772 (about $18,658,860), on the average a sum of over £621,000 (about $3,105,000) per annum for horses.

Among all our domestic animals the carriage horse stands alone, a costly reminder of neglected opportunity and a reproach to a race of horsemen. For the high-class roadster we must go to foreign countries in the regrettable certainty of finding there what we can not, or at all events do not, produce at home; and at the same time supply the competitors of the British breeder with the best blood in the world to use for the purpose of providing himself and us with the most valuable class of horses. Reference to this point invites examination of statistics. The following are the official returns of the horse trade for the past five years:

Export and import of horses, 1892 to 1896.

Year.	Export.			Import.		
	Number.	Total value.	Average value per head.	Number.	Total value.	Average value per head.
		£	£ s.		£	£ s.
1892	11,233	563,364	50 3	20,994	425,401	20 5
1893	11,962	507,762	42 9	13,707	376,819	27 9
1894	16,457	449,804	27 6	22,866	548,058	23 19
1895	21,564	549,882	25 10	34,092	921,490	27 0
1896	29,480	671,562	22 15	40,667	1,027,736	25 5
Total	90,696	2,742,374	.....	132,336	3,299,504	.....

NOTE.—These figures include the selling price, £6 to £8, of many thousands of ponies from Russia, Sweden, and Norway.

It will be observed in regard to the exports, first, that the number of horses we send abroad has been increasing with each recurring year; and, secondly, that the

value has been decreasing with equal certainty, showing that the class of animal we export is not what it was five years ago.

As regards the imports, it must be observed parenthetically that 1893 was an exceptional year; with the exception of that twelvemonth, the annual returns since 1886, when we received 11,027 horses from abroad, show a rapid and almost uniformly steady increase, until in 1896 we purchased nearly twice the number of horses we purchased in 1892; and what is quite as significant, particularly in connection with the figures relating to exports, paid a higher average price for them.

The difference between the average price received for our export and that paid for imported horses would convey a more accurate impression of the state of affairs could we eliminate from the former the large sums paid by foreign governments for our best thoroughbred sires. The occasional sale of such an animal as Ormonde for such a figure as £30,000 must be taken into account when considering the average price received for exports. In short, we are buying expensive horses from the foreigner and obtaining only low prices for those produced by our vicious system of breeding. These average prices will call for further notice later on.

It may be asserted without fear of contradiction that foreign carriage horses for years have been streaming into this country to realize the highest prices obtainable, namely, from £200 to £300 for first-class single horses, and any sum from £500 to £1,000 for match pairs.

The foregoing article, coming as it does from the pen of one so competent to write upon the subject, needs no comment from me, and I will simply add that it proves my statement concerning the demand for high-class carriage horses true, and that the prices they bring, if the horses be of the proper kind, exceed those paid for any other horses in England, except in extraordinary cases for speed or hunting purposes. The above table, showing imports and exports of horses by England for the last five years, confirms the fact that England is an importing nation.

The following table will show the total number of horses imported and exported by the United Kingdom from 1831 to 1896:

Imports and exports of horses.

Year.	Horses imported.	Horses exported.	Year.	Horses imported.	Horses exported.
1831	1,063	718	1873	17,822	2,816
1841	339	4,538	1874	12,033	3,050
1851	3,443	1,526	1875	25,757	3,135
1852	3,179	2,485	1876	41,148	2,659
1853	6,819	a 1,902	1877	30,524	2,258
1854	6,063	3,346	1878	26,521	2,967
1855	2,432	3,616	1879	15,246	5,018
1856	2,970	1,711	1880	9,294	5,128
1857	2,807	b 1,574	1881	9,950	6,108
1858	3,458	2,072	1882	8,827	6,444
1859	2,120	4,417	1883	9,627	7,376
1860	1,761	3,199	1884	12,928	6,973
1861	1,595	2,960	1885	13,023	6,196
1862	1,978	4,318	1886	11,027	7,326
1863	1,411	5,204	1887	11,649	9,455
1864	1,357	4,644	1888	11,504	12,884
1865	1,332	4,440	1889	13,859	14,267
1866	1,646	4,069	1890	19,404	12,922
1867	1,461	4,136	1891	21,715	11,238
1868	1,575	4,091	1892	21,026	11,233
1869	1,849	2,210	1893	13,719	11,961
1870	2,387	7,202	1894	22,866	16,558
1871	3,448	7,172	1895	34,092	21,564
1872	12,618	3,383	1896	40,677	29,480

a Crimean war. b Indian mutiny.

The following are the destinations, numbers, and values of horses exported in 1896:

Destination.	Number.	Value.
Holland	6,433	£70,441
Belgium	15,845	223,112
France	3,994	215,194
Other countries	3,208	162,815
Total	29,480	671,562

The cost of raising a horse in England until 3 years old has been variously estimated at from $150 to $200, according to the locality where the horse is kept. In my opinion the former figure is about correct.

While the statements made by Sir Walter Gilbey are based upon information obtained in England, some of the conditions there apply to other countries, and in order not to encumber this report with repetitions, these facts so applying will receive slight mention. Considerable space has been devoted to England, as the situation there seemed to demand it, but in the consideration of the present status of the horse business in other places not so much space will be occupied.

IN FRANCE.

Here the conditions are much the same as in England. By reference to the figures supplied by the United States Treasury Department the number of horses France received from us in 1897 will be seen to be very small, but these figures must not be taken as correct. So far as the Treasury Department is concerned they may be accurate, but in compiling statistics we can only trace the horses shipped from the United States ports to their landing place and there all trace of them is lost. The reason so few are accredited to France is from the fact that the vessels running directly between United States ports and French ports are so poor in accommodations that French dealers will not patronize them, but prefer to ship to an English port and then reship, even though the expense of so doing is greater. Thus it will be seen that while the statistics of our Government are correct in conveying the information they are intended to impart, they must not be understood to convey a correct idea of the number of horses each country mentioned actually received from us during the periods given. Many of the horses shipped to English ports were finally sold in France, Belgium, and other countries, while many of those received at Belgian ports were sent to Germany. Many shipped from the United States to Germany were sold in Russia, but the majority sent to England were sold there. The majority sent to Germany were sold there, while the larger part of those landed in Belgium were ultimately sold in Germany and elsewhere after being fitted for sale. This is especially true of the draft horses landed in Belgium, as will

more fully appear when we come to treat our subject under conditions existing in Belgium. I have said that the conditions here were much the same as in England, though this country produces a large number of coach horses that each year find their way into English markets. That France has long done all she could to produce a coach horse, from the absolute necessity of mounting her army, can not be denied, but that she has made sufficient progress to supply other nations with coach horses, or even meet the demands in her own country, will hardly be claimed.

From information obtained from the agricultural department of France I learn that the entire number of American horses sold in the Republic in 1897 was not far from 6,000, but I am unable to learn officially what prices they brought.

For much of the information obtained relative to the sale of American horses in France I am indebted to Mr. Eugene Vidal, who is one of the oldest and largest horse merchants in Paris. To one of his private carriages he drives a large American horse, and he handles more horses from the United States than any other merchant in the city of Paris. He sells each year about 5,000 horses in all and is thoroughly posted. In 1895 he handled 2,000 American horses, but the quality was very bad and they became so unpopular that in 1896 he only sold 500. Since then the quality of the horses sent him has improved and the prices he receives for them have likewise increased. He had in his stables about 100 head, mostly of a light type, being horses that would weigh about 1,150 to 1,200 pounds, but rather toppy and of good quality. These horses sell in Paris for about $200 to $250, and are put to various uses. Some of the heavier and coarser ones go on the omnibuses and the lighter ones into carriages if good enough. If not, they are used in general run-about traps, unless heavy draft horses, when they go into heavier wagons. The good draft horses brought from America to France usually sell for about $200 each, but the horses most in demand in Paris, as elsewhere, are coaching horses from 5 to 6 years old, such as are represented by the cut on page 52, and which sell readily at from $150 to $500, according to their style, action, and quality. If they attain the distinction of high-class carriage horses, the price in Paris, as in London, is only governed within reason by their quality and the size of the purchaser's purse.

Mr. Vidal was asked: "From your experience in the horse business and your knowledge of American horses, what would you advise the American breeder to raise with a view to obtaining the best prices for his horses in the markets of France?"

"I would recommend," he replied, "that they raise draft horses, not too large, but on short legs, compactly built, with clean bone and good action, and first-class carriage horses, if possible. The latter properly matured are very scarce, and there is hardly any limit to the demand if they have size, quality, style, and action."

Mr. Vidal also says that the tendency of the American breeder, judging from the draft stallions he has sold for America, was to increase the size of their horses without regard to the quality, the natural result of which was a rough ungainly horse, that the people of France do not like. He suggests that now, since we have the size, we should pay more attention to quality than we have heretofore done.

The scale of prices for similar horses seems to range about the same in Paris as in London, and practically the same kind of horses seems to be in demand, the high-acting carriage horse always having the preference. In general, prices in France are the same as they have been for years.

There are not as many American horses used on the omnibuses of Paris as of London, but I am told that where they have been tried they have given entire satisfaction. The average price of the bus horses in Paris is $200. Fifteen thousand are now in use, and the companies buy about 3,000 annually.

It will be seen that there are fewer horses used in Paris omnibuses, in proportion to the size of the city, than in London, but it will also be observed that Paris, in proportion to the size, has more cabs than London. The cab horses of Paris come principally from the Norman provinces, comprising the following departments: Calvados, Manche, Orne, Seine-Inferieure, and Eure. The prices paid for them differ little from the prices paid for the Irish cab horses of London, but are some higher, being from $125 to $150 each. There are about 40,000 cab horses in use in Paris all the time, it being estimated that there are about the same number of cabs as in London; but the horses, as a rule, are not so good, and lack much of being kept in the same condition as the cab horses of the latter place. I was shown 25 horses which Mr. Vidal had just imported expressly for one of the cab companies of Paris, but I can see little in it for the American breeder at $150 per head in Paris, when losses are sustained and freights, duties, commissions, etc., are paid.

We will next consider the requirements for cavalry horses in France.

For the following figures I am indebted to "Le directeur des Haras," Mr. P. Plazen (in charge of the Government breeding stables).

The entire number of horses in France is 2,943,668. The entire number used for army purposes is 127,000 and the number annually purchased for remounts is from 12,000 to 13,000, 10,000 of which are for saddle purposes. The average price is $200 each. The different grades and sizes are as follows:

	Price.
Dragoons (5 feet 0.6 inch to 5 feet 2.2 inches)	$200
Small cuirassiers (5 feet 2.2 inches to 5 feet 3 inches)	200 to 230
Cuirassiers (5 feet 3 inches to 5 feet 4.6 inches)	220 to 250
Artillery (5 feet 2.2 inches to 5 feet 3 inches)	150 to 190
Officers' horses (5 feet 1.4 inches to 5 feet 5 inches)	220 to 400

(In computing the above, 5 francs to the dollar only was allowed.)

The average weight which cavalry horses in France are expected to carry is from 90 to 100 kilograms, or from 198 to 220 pounds. In order to sustain such a weight and run and jump with it, as they may at any time be required to do, they must have strong, short backs, good loins, and heavy muscles.

Mares used in the French cavalry, as well as horses, must be sound, have good bone, short backs, heavy loins, strong hips, and good feet. Action is not considered, except interfering, and they must be able to gallop well. The requirements of the different armies are practically the same in all countries I have visited, but I find some mounted on heavier horses than others.

At the present time the French buy their army horses in the same provinces that their cab horses come from, using only the inferior ones for the latter purposes. Few American horses have been tried in the French army, as few have met the requirements, but some have doubtless been bought of the dealers without the officers who purchased them knowing they were American bred, and in these instances I am assured our horses have given entire satisfaction. At least there have never been any complaints.

In France, as in all other European countries, horses are seldom weighed, and never described by weight. In describing them their height only is mentioned, but if they are said to be a certain number of meters high it is understood that they are uniformly built and will weigh what a horse of perfect conformation of that height should weigh. In America, on the other hand, the weight is oftener spoken of than the height, but each custom is wrong, for if the height and weight were both given one could form a much better idea of the general conformation of a horse, his compactness, and distance from the ground, etc., without seeing him.

The artillery horse in all countries is more compactly built than the cavalry horse, and differs little from the horse I have described as being suitable for the 'buses.

The cost of raising horses in France does not differ much from that in England. The actual cost until 2 years old is about $150, and from that time on every horse is expected to pay his own way. If he did not do this, horses could not be raised in France at the prices mentioned above. Another important feature of this method is that by handling the horses from the time they are 2 years old they become gentle, which adds much to their value and which overcomes one of the worst complaints against the American horses—which is, they are not broken. This is the first complaint one hears in every country where American horses have been used.

Other complaints urged against our horses in France are that their necks are too short, they stand with their hocks too close together, their hips are not long enough, their backs too long, etc., but many of these objections could be found with the horses of any other country.

While France is one of the greatest horse-producing countries in the world, she does not raise all the horses she needs. The Government has spent hundreds of thousands of dollars for breeding stallions and still continues to keep up her breeding stables. Besides this she requires every stallion used as a sire to be approved by the Government commission and offers prizes to the best horses. Under this wise arrangement we find the breeding horses of France are divided into four classes: (1) Those belonging to the Government; (2) those belonging to private individuals which receive premiums from the Government on account of their breeding qualities; (3) those which are approved and permitted to be used for breeding purposes, but which receive no premiums; (4) those that are not approved and not permitted to be used for breeding purposes.

I have before me the annual report of "Le Directeur des Haras," of France, and while I can not give all the statistics relative to the importation and exportation of horses, it is interesting from our point of view to note how many more horses this country imports than she exports.

The following is the number of horses imported and exported by France for the six years from 1891 to 1896:

Year.	Imported.	Exported.
1891	16,007	24,108
1892	14,343	21,702
1893	15,269	24,121
1894	21,031	22,328
1895	36,467	21,484
1896	32,912	20,945

The above figures, which are official, show that up to 1895 France exported more horses than she imported, but in 1895 and 1896 she imported many thousands more than she exported. I am not able to learn what the values of the horse imports and exports of France were for each year mentioned.

The Government duty on horses from other countries to France is 30 francs, or about $6, per head.

IN BELGIUM.

Here we have a country in which different conditions exist from those found in France or England, as it produces nothing but draft horses. The entire Kingdom of Belgium comprises but 11,000 square miles, yet she is one of the great horse-producing nations of the world. From Flanders we trace the earliest history of the draft horse, and, following their customs of early times, the people of Belgium continue to breed no horses except the draft, and that of a particular type peculiar to their own country. Hence we find a nation with 5,000 cavalry and 1,200 artillery horses that does not produce any used for the former purpose.

Belgium now purchases for the remounts of her army about 800 horses per year, and while the number is not large the market is within the easy reach of the breeders of the United States if they see fit to take it.

Chevalier Hendricks, an officer in the Belgian army and an acknowledged authority upon horses in his country, has studied the question under consideration with great care for the last few years. In a recent address he advocated the plan of purchasing nothing but American-bred horses for all remounts of their army. To this gentleman more than any other one person Belgium is indebted for her present efficient records of her draft horses.

I have before me a communication from the Chevalier upon the subject of our ability to furnish the cavalry horses Belgium needs, and, coming as it does from such high authority, I quote from it at considerable length.

The first part of the communication treats of the sizes of horses used for different army purposes in Belgium; but being almost identical with those of England and France, I omit the figures.

This gentleman says:

The horses should be 5 years old; the Government accepts only half of the horses 4 years old; but prefers buying all horses 5 years old, because these can easily take their places in the ranks in five to six months' time.

The weight which must be carried by the horses (soldier and equipments) is not over 110 kilos; it varies between 95 and 110.

The Belgian Government pays for fresh horses from 1,000 to 1,150 francs; for the Irish horses, £40 to £46.

Every year the Belgian army buys 800 Irish horses for remount of the cavalry and for the artillery.

The Belgian Government would be pleased to trade with American merchants if the United States would offer horses of a good quality at a little less expense than we get them elsewhere. In this case the Government would not hesitate to buy yearly a more considerable number of horses to increase the effective force of cavalry.

Belgium does not breed cross-bred horses. We understand, under the name of cross-bred horses, all horses (*chevaux de luxe*) designed for the use of the wealthier classes—that is, not working horses. Belgium furnishes only draft horses. They are of two kinds; the heavy are what are called Flemish or Brabantine horses, the light are the Ardennes horses. Belgium buys its horses "*de luxe*" in Great Britain, in Ireland, in France, in the Netherlands, and in Germany. In 1897, 4,400 American horses from the United States were sold in Antwerp. It does not matter to Belgium where she buys her "*chevaux de luxe*" or fresh horses. The important point is to obtain the best horses at the lowest prices.

Besides the type of the fresh horse, which is the Irish type, the horses in great demand in Belgium are the hunters and the coach horses.

In case that the Belgian Government would mobilize its army, it must want in a few days a great number of horses. It should certainly want 3,000 saddle horses immediately. The matter of remounts is the same in Italy as in Belgium, and the United States is situated to secure the monopoly of supplying horses for the Italian army.

Commenting briefly upon the remarks of the Chevalier, I will say that they show a disposition to use our horses for cavalry purposes in

Belgium, and that the friendly spirit will doubtless be fully appreciated by every American breeder of horses and by our people in general.

The horses that Ireland is now furnishing Belgium for her army are the largest and very best grades of the class heretofore mentioned as being furnished by that country to supply the cabs of London. Thus the horses Belgium gets are practically the same as those used in England's army.

The artillery horses used in the Belgian army come chiefly from the Ardennes, and are a low-down, powerfully made horse, with good bone and good action. These the Belgian people will continue to supply.

Having found a place where we can sell a few horses to the army, it now remains to consider whether the price paid justifies our raising them, and whether the Belgian people will soon be in a position to produce their own cavalry horses at less money than they can purchase them elsewhere.

The prices now paid for cavalry and artillery horses in Belgium are from $200 to $230 each and can not be more, except for officers' horses, which the officers, if able, usually purchase themselves.

The general prices for horses in Belgium have ranged higher for the last few years than for a long time; and while this may be difficult for breeders in the United States to understand, the situation will be more easily comprehended when we consider the great cost of raising horses in Belgium, and the further fact that the United States has in the past cut no figure in the horse trade of the continent. A careful perusal of this report will show what kind of horses each country mentioned buys from the other, and that the United States has never been considered a factor in the business.

The cost of pasture in Belgium ranges from $6 to $9 per month; hay is worth $12 to $15 per ton, and oats from 50 to 60 cents per bushel. The estimated cost of raising a horse in Belgium until he is 4 years old is from $300 to $350, if well cared for, and the latter figure is all the horse is worth for common work when matured. Accepting these figures as correct, it will be seen that no profit could inure to the raisers of horses in Belgium under the conditions existing in the United States; but the conditions are not the same. In Belgium the colt is broken to work at 18 months old, and from that time on he is expected to earn his living by the work he does for his owner. At this age a good draft colt will sell at from $200 to $225, and as it has not cost this much to raise him to that age there is still a profit, though not a large one, left to his owner, who invariably sells him if he has not work for him.

Belgium being a draft-horse country exclusively, it may appear strange that most of the American horses sold there are draft horses. This, however, is true, and is due to the fact that the Belgians will buy a draft horse because they are familiar with him and because

they know there is always a demand for this class of horses. They know how to fatten and prepare this horse for other markets, which is just what they do, and then sell him again. They do not use many of the American draft horses that are sent to them. They like their own type better, and while most of the American horses which are sent to Germany remain there, the reverse is true of Belgium. The majority of the light horses sent to Belgium remain; but when it comes to the selection of a draft horse for his own use, the Belgian has his own ideas and selects one after the type he is most familiar with, the same as the Englishman naturally likes the Shire, the Scotchman the Clyde, and the Frenchman the draft horse of his own country.

Thus we see that while our statistics show Belgium to have received 4,213 horses from us last year, there was but a small per cent of them used in that country. She sells the largest number to Germany, while many go to France and a few even to Italy. That both Germany and France get many more of our horses than our reports show are shipped there direct is patent from the number given by their own statistics. The above facts show that the United States can raise draft horses for export at a profit, but as I shall speak of this feature of horse breeding later will not discuss it now.

What has been said about carriage horses in other countries is applicable to Belgium. This country makes no attempt to produce them, but here as elsewhere they sell better and at higher prices than any other kind. From what has been said about the cost of producing horses in Belgium it will be seen that those which mature earliest are the most profitable for the Belgian breeder. The cost of feeding is so great that he must raise a horse that will be ready to pay his way at the earliest possible day. Carriage horses as a rule would not at the age of 18 months be able to do this, and hence to raise them in Belgium will cost even more than to produce the draft horse.

While Belgium invites us to supply her with carriage and cavalry horses, she guards with jealousy her production of draft horses. She makes no discrimination against us, however; and if we raise good horses they will sell to advantage. Belgium will ever have the advantage, however, of producing a horse that her own people like better than ours, but for the immediate profit there is in it she will take our draft horses, keep them for a time, and then pass them on to Germany and other countries.

In Belgium, as in other countries, the first thing one hears is that our horses are too wild and too hard to break. This is easily understood when we consider that in Belgium the colt is almost a member of the family from the time he is foaled, and that he is broken to work and handled like a dog from the time he is 18 months old.

This is true to some extent in all the horse-producing countries of Europe, and fully explains the reason of the complaint we hear against the American horse, that he is wild and hard to break.

To show how the Belgian Government is protecting her draft-horse-breeding industry, I will state that all breeding stallions in Belgium must be approved by a Government commission. They are only approved for one year at a time, and while they may continue to be approved for many years, they must pass their annual examinations, as will more fully appear hereafter. Stallions in Belgium do not travel about the country as in France, but their territory is usually circumscribed by the department in which they are approved. These departments are subdivided into "arrondissements," and here the approved stallions meet to contest for annual prizes. The first prize awarded to stallions 4 years old is $120 and the second prize $100. The first-prize winners at these concours or fairs of the different "arrondissements" then meet at another place in the province to compete for other prizes, those of the first quality being awarded another premium of $160. These are all the prizes the horses can receive at 4 years old, but when 5 years of age fresh honors await them if again approved by the Government commission. The commission selects a certain number of 5-year-old horses in each province, which number varies according to the needs, and awards them each $200 per year for five years; but the horses must pass their regular examinations each year, and if bad from any cause will be cut off. After a stallion has drawn this pension or premium for five years he may still be approved from year to year indefinitely, while he is considered good for a sire, and draw from the Government various sums, ranging from $60 to $150 per year.

There are four places appointed in the Kingdom for the meeting of stallions that are over old and have won first prizes. The Kingdom is divided into these districts for convenience, and the stallions from them meet at their respective places in July of each year. At each of these meetings four prizes of $300 each are awarded the four best stallions, thus making 16 additional prizes of $300 each, or $4,800 more in prizes which the Government pays. Anyone parting with his horse before the expiration of the year forfeits his prizes, and thus the Government makes it difficult and expensive for anyone to buy and take away the stallions which it wants for breeding purposes at home.

IN GERMANY.

In importance as a market for our horses Germany ranks next to Great Britain, and in speaking of it we come to consider one of the largest horse-producing countries in the world. Especially is it noted for its lighter types; but notwithstanding this fact, we find that Germany is one of the largest horse-importing nations.

If the greatest horse-producing countries can not, or do not, supply their own home demands, what are we to expect from those which do not produce horses at all? When I speak of the production of horses I mean large, useful horses, as distinguished from small, inferior ones, or ponies.

As has been remarked, the condition in Germany is almost diametrically opposite to that of Belgium, and differs from that of France and England, as the latter countries produce both heavy and light horses, while Belgium produces nothing but the draft horse, and Germany only the kinds used for the carriage and army.

For many years Germany has been trying to raise the best cavalry horses, and in a certain degree she has succeeded. She to-day has the best mounted army in the world, with perhaps the exception of France. We are not surprised that Germany's course renders it necessary for her to purchase her draft horses, but we are naturally astonished to find that she imports more light horses than heavy ones. This is done in the face of the fact that the stallions exported from Oldenburgh, Hanover, and Holstein have contributed more, perhaps, to the production of carriage horses and cavalry horses in other countries than those from any other places.

I must confess my surprise when an investigation of the official records revealed the fact that Germany now imports about 100,000 horses annually, and that they cost her in round numbers about $20,000,000. Investigation shows that quite a large per cent of these importations are of the lighter types, and to convey a better idea of the situation I set out the importations in detail for 1895, these being the latest statistics I could procure. They are compiled by the Imperial Statistical Bureau of Germany, and published in the German Year Book for 1896. In 1895 Germany imported as follows:

Country.	Number.	Remarks.
Belgium	19,942	Horses principally draft.
Denmark	15,468	Horses principally for bus and tram.
France	6,732	Horses principally draft.
Great Britain	1,954	Officers' army horses from Ireland.
Holland	10,239	Carriage and van horses.
Austria	13,795	Blooded horses, some actors, for carriages.
Russia	32,596	Ponies for mines.
United States	2,479	Draft and medium-sized horses.
Total	103,205	

The cost of these horses was about $18,700,000, or a little over $180 per head.

These figures impress us all the more forcibly when we consider that nearly one-third of the entire imports, i. e., those coming from Russia, are small, inferior animals, being ponies that are used principally in the mines. These ponies are bought at a very low figure, but to offset this in part the fact must not be ignored that a considerable number of the horses coming from France and Belgium are draft stallions for breeding purposes, and cost from $500 to $600 each.

Whatever conclusion we may draw from the above figures, they prove conclusively that Germany imports a large number of horses and pays a good round price for them.

An enterprising firm of horse merchants, fully awake to the demands of their country, has recently completed a very large and

elegant stable in Berlin with a view of handling American horses exclusively. They have buyers in the principal cities of the United States, and do their own importing. To them I am indebted for much information, and I saw in their stables several hundred American horses which had landed recently. They have all kinds from the Kentucky thoroughbred to the draft horse. I was surprised to see so many horses of light types in a country where the carriage horse and cavalry horse had been bred almost exclusively for so many years, and still more astonished when told that the lighter or carriage types sold even in Germany better than the draft types.

This firm sells all horses at public auction, and good "low-down" blocky draft horses were bringing about $225 each. Nice smooth 1,100 and 1,200 pound horses, of carriage type, bring the same prices, but the best draft horses and the better class of the lighter horses were selling at from $250 to $300 each. I was shown a "low-down," heavy-muscled, heavy-boned, well-made, black draft team, of rather superior quality, that had sold for $600 and would be used for heavy work in the city on the truck or wagon of some large firm.

The bus horses of Berlin come mostly from Denmark and are very similar in conformation to the bus horses used in London, though not so uniform. Quite a number of American horses are now used on omnibuses in Berlin with entire satisfaction, and are becoming popular.

The class of horses that the United States is now sending to the different European markets suits much better than those formerly sent, which is due perhaps to the fact that the importer better understands the demands of his customers than formerly, but however this may be the horses now sent are fast redeeming the reputation of the American horse, which was most unfavorable for some time, on account of the very inferior animals sent to the different European countries when the business of exporting horses from the United States first assumed importance. The prices paid by the bus companies of Berlin for their horses range from $175 to $200 per head.

In Germany, as elsewhere, we hear the general complaint that our horses are not well enough broken, and we are again admonished that we must raise a horse on short legs if we would have him command a good price. The American horse acclimates quickly in Germany and has good endurance. The firm above mentioned says the United States is to-day furnishing the best horse for the price that can be bought anywhere in the world, and that the worst difficulty they experience is in getting the proper kind fast enough, principally on account of the poor shipping facilities to German ports.

The American horses can not at this time be sold to the armies of Germany, but there are other demands that it is more advantageous to supply. The firm above mentioned assured me that if shipping facilities were right so they could get the horses as they needed them they would be able to sell in 1898 2,000 draft horses, 2,000 medium,

well-shaped, general-purpose horses, and 2,000 carriage horses. They began their present business only last December, having just completed their stables, and in one month sold 300 American horses.

The cab horses of Berlin and other large cities in the Empire come from Prussia, and are the inferior animals of that country, not fit for army use. They are too low in price and too inferior in quality to interest the American breeders. One indication that the Germans like our horses is the fact that nearly all we import to that country remain there, and, as before stated, many find their way to the German markets after being landed at other ports. This is evident from the fact that our Government reports show Germany to have taken from us in 1895 but 1,324 horses, while the German yearbook for that year shows she received duties paid on American horses numbering 2,479, being 1,155 more than we give Germany credit with that year. The duty imposed by the German Government on all foreign horses is 20 marks, or about $5 per head.

While Germany imported over 100,000 in 1895, she exported but 7,980.

I shall not occupy much space in commenting on the cavalry horses of Germany, except to state where they are purchased and the average prices paid for them. The description of the cavalry horses of England, France, and Belgium substantially corresponds with the requirements of Germany, but from what I can learn they are using in the latter place, for their light cavalry, a little lighter horse then is desired in other countries, though the heavier cavalry of Germany is mounted on horses that have few equals for that purpose in the world. The most of the cavalry horses in the German army come from east and west Prussia, some coming from Hanover and Holstein.

The Prussian horse is not a large horse, but is possessed of much blood, and if the weights given me by the United States consul-general at Berlin are correct the horses are lighter in weight than those used for the same purposes in the other countries I have mentioned.

I am indebted to the consul-general for a copy of the consular report for 1897, from which I quote briefly:

The horses purchased are generally 3 years old, only exceptionally 4 years. The former remain one year at the remounts depots before they are turned over to the regular service. Officers, as a rule, buy east Prussian horses; those who can afford it buy English blooded stock. The best Prussian horses bring from $225 to $340. These, however, are bought at an age of from 5 to 6 years, and well trained, especially since the Prussian horse is hardly fit for use before its sixth year is concluded.

English and Irish horses, which are bought largely in Hamburg, are, owing to the richer nourishment which they receive on their native pastures in their younger years, fit for use at the age of 4 to 5 years, and are less nervous, shy, and excitable than the Prussian animals. The Irish horse is the easiest to ride under all circumstances, the early wholesome nourishment giving it a calmer and more docile temper.

I have reason to believe that under the name of Irish stock many American horses are sold in Hamburg, as the description given of them closely resembles

the American horse, and many of these are imported into Hamburg, but are seldom mentioned by dealers there as American stock.

The average price paid by the German Government for army horses varies. For artillery, from $140 to $160, and for the regular remounts of the cavalry about $200. The German Government reserves the first right to select its cavalry and artillery horses from the countries within the Empire that produce them, so that other nations must take what is left.

In east Prussia horses can be raised very cheap, as the land is not dear and only fit for pasture, and the horses that bring a low price are not broken at all when the Government gets them.

In Germany, as elsewhere, the high-class carriage horse is the one that sells best and is the scarcest, notwithstanding the German people have been breeding this horse for years. The large carriage horses come from Oldenburg, while Hanover and Holstein also produce carriage horses of a lighter type.

There is such a range in prices of carriage horses in Germany that it would be impossible to form an accurate estimate of their value, since so much depends upon individual quality, appearance, action, etc., as before stated. Farmers usually get from $300 to $500 for good ones, according to the number of the desired qualities the horses possess, but when the dealer has properly matched up a pair and handled them for a short time they sell for all kinds of prices, just as in England and elsewhere. Many of these horses are sent each year to Paris and a large number of the best "actors" are sold at high prices in Italy. The large landau teams bring the highest prices and the brougham teams next, as is the case in the London market.

Except in the Grand Duchy of Oldenburg, the Government buys all the horses that are used for breeding purposes and distributes them throughout the breeding districts, taking care to select for each particular district the horse possessing the peculiar type best suited to the locality where he is sent.

In Oldenburg the stallions are owned by individuals, but must be approved by the Government commission if used for breeding purposes, and here the Government awards prizes to the best.

The cost of producing horses in Germany does not differ much from that in France and England, except that it is somewhat less in Prussia, where much of the land is good for nothing but pasture. In Oldenburg and Hanover, however, where the larger types are raised, the cost is about the same as in England, and here the colts not kept for breeding purposes are all put to work at 2 years of age.

IN RUSSIA AND ITALY.

I have considered the condition of the American horse trade in the four most important countries to which we are now exporting, but

there are other countries which I must mention incidentally, and these are Russia and Italy. The former has an immense cavalry, and no good horses with which to supply it. While Russia has one of the largest cavalry equipments in the world, she has it mounted on the poorest horses. Some efforts have been made of late to breed up the horses of Russia so as to render them more suitable for cavalry purposes. But as yet little progress has been made, and the country is so large and the horses so very inferior that it will take many years to make any appreciable progress or improvement.

The Orloff horse, which is now produced in some portions of Russia, is not a good cavalry horse. He is too light in weight, too long in the back, has sloping hips, and lacks the substance that is absolutely necessary to a good cavalry horse. He is short ribbed, narrow in the flank, and light in the bone, and while some are remarkable for their speed, they are, as a rule, very poor cavalry horses.

This, however, is the best horse for that purpose that the country affords, as the Cossack horses are mere ponies and would have no chance whatever against the best cavalry horses of the present day.

Russia now buys her cavalry horses at home, except the horses for her officers. She does this for two reasons: First, she is compelled to; and, second, she is anxious to encourage horse breeding in her own country. This is a great field for the American horse, and sooner or later he will find it. The peculiarity of the Russian people renders it difficult to ship the horses there direct, but their dealers have already commenced the shipment of American horses from Berlin, and are much pleased with them. Berlin seems to be the accepted distributing point for that country, and the question will doubtless arise in the minds of some, Why do they not purchase horses in east and west Prussia, where the German Government gets its cavalry remounts? The answer is that the German Government reserves the right to select what horses it wants first, and those it leaves are only fit for cabs and work of like character. Thus it will will be seen that the Russian may as well be content with his Orloff horse in preference to the one he would get in Germany at anything like a reasonable figure.

The Russian Government is buying stallions in Belgium, England, Germany, and other places to improve its horses, but so great is the task that it will be long in accomplishing it.

The demand for our horses there, which will perhaps be first shipped to Germany, must have a potent influence on the export trade of the United States at no distant day.

What has been said of Russia can also be said of Italy. This country produces no horses worth mentioning, and depends on Germany for her carriage horses and on Hungary for her cavalry horses. Hungary produces a light, nervous horse with much blood, and not just what is required for cavalry purposes. Italy requires a consid-

erable number of horses for her cavalry each year, and we should at the present time be furnishing her what she needs, as we can furnish her a better horse than she is now buying elsewhere.

SUMMARY.

It must be apparent from the above facts that few nations produce horses that are at all suitable for general use, and that none are at the present time raising all of the kinds or the number they require for their own uses. It must also be remembered that this condition can not change quickly, as but few countries are so situated geographically as to render them capable of producing good horses, however hard they may try. The natural environments have much to do with the development of horses, and if these are not right all efforts must prove futile.

The figures I have given, showing the present imports and exports of the greatest horse-producing nations of the world, and the prices certain kinds of horses bring in the different countries alluded to, afford the best possible criterion of the supply and demand.

I have not only tried to give an accurate idea of what horses are worth in the different countries, but have tried as well to show what each is producing, and about what is the cost of production. This decides the further question whether the present demand is temporary, and whether or not the countries which are now taking our horses will be able soon to produce them cheaper than we can supply them.

These questions are all important, and if correctly answered will shed much light upon the horse-exporting industry of the future.

There is little doubt that France and Germany will continue to raise the great majority if not all of their cavalry horses, and Ireland may continue to supply the few that England needs; but the reader has not failed to notice the many places pointed out where our horses can be supplied for civil uses at much greater profit than when sold to the armies of these countries.

I have given the approximate cost of raising horses in several countries, and it will be seen that there is no country that can produce the same kind of a horse as cheaply as the United States. In such cases as that of Ireland furnishing the cab horses of England and the cavalry horses of Great Britain, or Prussia supplying the cavalry horses and cab horses of Germany, at a price below which we could furnish them, they have left us a better and more profitable market for higher-priced horses, which we can raise, and we can therefore well afford to lose the cheaper markets.

With the exception of Belgium, every country I have mentioned imports more horses than it exports. This may seem strange, in view of the fact that I have spoken of the greatest horse-producing countries of the world, but the fact remains.

In the case of Belgium it matters little, as she is a distributing point for our draft horses and offers to buy our cavalry horses from us.

It is worthy of comment that in every country where I have made investigations I have invariably been told that no horses sold so readily, nor brought such large prices, as high-class carriage horses. Are we prepared to raise them? I answer, Yes. It is true, we will not always attain perfection, but we have the best conditions for producing a high-acting carriage horse of any country in the world. Rich, nutritious food is very cheap, and in certain parts of the United States we can develop carriage horses with assured success. I have said that too much blood spoils the action. This is invariably true, but in our country we have finely formed mares with good action and plenty of nerve without any thoroughbred blood in their veins. If we use the proper kind of large, active, fine-styled coach stallions as sires and do not succeed in producing what we want in the way of a high-acting carriage horse, there are so many places for the horse we will produce that we can not make a mistake.

I would not be understood as in any sense discouraging the breeding of draft horses. I have attempted to show that good ones sell in any market, and where one has large, heavy draft mares they should be bred to a low, blocky draft horse of good quality, and more attention should be paid to quality than to size. Remember, a good draft horse must be on short legs, and his bone should be clean but large if he is to bring a good price.

Those who have smaller mares would do better, in my judgment, not to breed them to draft horses. It is true draft horses would increase the size, which is very important, but the exact finish required would be lacking, and the horse produced would not bring the price he would if sired by a large, high-acting coach stallion.

I have pointed out the faults of our horses as suggested to me by European buyers, but the greatest complaint is that they are so poorly broken. This is the first criticism one hears, and while I am aware that we can not handle our horses as the people of Belgium do theirs, we can break them better than we have done and not permit them to run wild in the fields without being halter-broken until the day we are to deliver them to the buyer. People in Europe are not used to our method, and because a horse is wild and frightened they regard him as vicious.

Horses for racing purposes, either trotting or running, have not been considered, as the demand for them in Europe is exceptional and not general, and I do not regard them as the best horses for the ordinary breeder to raise for export.

It will also be observed that the prices paid for good horses in different European countries are about the same, and in each one visited I made special inquiry as to whether prices had declined any within the last five years, and learned that they remained the same with

the exception of Belgium, where they have advanced within the last three years.

Whatever horse we raise, be it draft, hunter, coacher, cavalry, or other kind, he should be on short legs; have his height in the depth of his body and not in his legs. In other words, raise a high horse on short legs. Also remember that, whatever kind he is, his back should be short.

This rule always holds good, but by it I do not mean to raise a really short horse. Let the horse be of good length, but have his oblique shoulders and his long, straight hips instead of his back supply it. Observe these rules and you can not go wrong.

The present shipping rates from New York to London by the new modern vessels of the Wilsons and the Furness-Leyland lines are as follows: £5 10s., to include freight, feed, attendance, and insurance, the latter risk, on a valuation of £25 per head, to terminate ten days after steamer's arrival; £5 2s. 6d., to include freight, feed, attendance, and insurance, the latter risk, on a valuation of £25 per head, to terminate on horses walking ashore; £4 7s. 6d., to cover freight, feed, and attendance only.

Shipping rates from Montreal to London are practically the same as above, as are also those to Bremen and Hamburg. In the latter cases, however, the shipping rate is $25 per head, and insurance costs 4 per cent on the amount carried, the company's liability ceasing as soon as the horses walk ashore at port of destination. From the best information attainable, I estimate the loss in shipping to average about 3 per cent.

It is, of course, not expected that the breeder will be able to sell his horses direct to Europe himself, as many things are to be arranged before this can be done, and the exporter who ships them in large numbers can do so much cheaper than the person who ships but a few. It is the intention of the above report, however, to induce the breeder to raise horses that will more readily sell, and at better prices, to his local dealer for export. The exporter has much to contend with, and his expenses are large. His horses must be kept for some time before they can be put in shape to sell, after their hard trip, and some of them will be found to improve slowly. If, however, the breeder will raise the right kind of horses, the exporter can pay him a good price for them and still have left for himself a reasonable profit to pay for all his trouble, time, and risk.

EXPORT OF HORSES FROM THE CHICAGO MARKET.

[Report of Inspector William A. Bruette, dated Chicago, Ill., September 3, 1897.]

SIR: I herewith beg leave to submit the following report on the export horse trade at this point:

The exporting of horses has been going on from this point (Chicago)

for the past ten years in a desultory way, but did not assume proportions of material importance until 1893.

Foreign horsemen who visited this country, presumably through the instrumentality of the Columbian Exposition, found our markets surfeited with horses, while there was a shortage abroad. During that year, in an experimental way, 1,000 horses were purchased and exported with satisfactory returns. In 1894 there were five foreign buyers, or their representatives, on this market, and 2,000 horses were exported. In 1895 5,000 horses were purchased, and the number of buyers was materially increased. In 1896 there were upward of fifty buyers on the market, and 10,000 horses were purchased and exported. The present season over seventy buyers are on the market, and in the first six months fully 10,000 horses have left here for foreign ports, and all indications are that over 20,000 horses will be exported by the end of the year.

The classes or types of horses in demand for this export trade are as follows: First, coach horse and drivers; second, cab horse; third, bus horse; fourth, draft horse; fifth, standard trotter.

(1) The driver or coach horse must be of good color (black pointed, dark-red bay, dark chestnut, sorrel, or black, in order of their desirability), must show good breeding, be from 15.3 to 16.2 hands high, have clean cut, rather small head, long, fine, well-carried neck, good bone and substance, short back, round barrel, clean, smooth hips and loins, square buttocks, tail set on rather high, good knee and hock action, and be a stylish mover, the more speed the better. Horses of this class have advanced, and will continue to advance, in price, which ranges at present from $125 to $350. They must be broken to drive in single or double harness, be tractable and of good disposition. The supply is of various breeding, the greater number by standard trotting-bred or French coach stallions, out of native or half-bred French draft mares. They are shipped to England, Germany, France, and Mexico, and constitute about 8 per cent of our exports.

(2) The cab horse is rather a blocky made animal that will weigh from 1,050 to 1,150 pounds, standing 15½ hands high, short coupled, smooth, and well balanced in conformation, good bone and substance, and a fair traveler; a horse such as we regard as a general-purpose horse. These horses are used on the cabs and light delivery wagons and for ordinary driving. Prices range from $80 to $115. England takes 50 per cent of them, Scotland 10 per cent, France 25 per cent, and Belgium 15 per cent, the Germans requiring heavier horses.

These horses are the result of crossing the Norman or Percheron horse on the small, smooth-made, common mare of good quality. Fully 40 per cent of our exports are of this class.

(3) The bus or tramway horse weighs from 1,200 to 1,450 pounds, stands from 15.3 to 16 hands high, rugged, made slightly on the blocky order, good bone and substance, well muscled and put together, with sufficient action to enable him to move off at a fair

Since the first shipments in 1893 prices have steadily advanced and are now fully 30 per cent higher than they were at that time. Notwithstanding this, the demands of the foreign buyers have become more and more importunate, and they have become less arbitrary in their selection of character and type and readily accept horses that would have been rejected a year ago as undesirable for their trade.

Statement showing destination of 40 per cent of the number of horses estimated as exported from Chicago during the year 1896 and 60 per cent of those exported during the first eight months of 1897.

Month.	London.	Antwerp.	Havre.	Ghent.	Bordeaux.	Copenhagen.	Ostend.	Hamburg.	Total.
1896.									
January	502								502
February	617	46	20						683
March	294							20	314
April	300	46		27				25	398
May	168			47				40	255
June	209	41							250
July	100		35						135
August	152		56					20	228
September	498	40	40		20			20	618
October	252	41							293
November	75								75
December	111	18						25	154
1897.									
January	466		14			28			508
February	624	38							622
March	941	46						98	1,085
April	1,108	90					25	258	1,481
May	542	165					42	160	909
June	305	274	22					105	706
July	377	167						62	606
August	174	126						200	500
Total	7,815	1,138	187	74	20	28	67	1,033	10,322

REPORT REGARDING THE EXPORT OF HORSES FROM BUFFALO, N. Y., AND VICINITY.

[Report by Inspector Nelson P. Hinkley.]

SIR: As requested by you in a letter of recent date, I respectfully submit the following report concerning the export trade in horses from Buffalo, N. Y., and vicinity:

I have interviewed nearly all of the horsemen who are interested either in purchasing for or selling to the export trade, also the shippers of export horses from this city, and find that those which have been and are now being exported are all of the better class. They consist of horses for the following purposes: Cabs, tramroads, omnibuses, cavalry, artillery, light and heavy van horses, jobmasters (or coach horses), cobs, heavy and light hunters, trotters, and pacers. The light and heavy van horses are used for all draft purposes. Tram horses are used for street railways and tramways. Omnibus horses are in large demand, and are used in large numbers for drawing passenger omnibuses for public street service. Cavalry and artillery horses are, as the term signifies, used in the several foreign armies for army purposes. The horses termed "jobmasters" are used for public carriages,

funeral work, and all the purposes for which American coach horses of this country are used. I am informed that a jobmaster in a foreign country is a man of large means who owns a large number of high-class horses and leases them to individuals for private purposes for the season. The coach horses exported from America are sold only in limited numbers to private gentlemen for private use. Cob horses are principally used by business men for hack or road purposes. Heavy and light hunters are used for saddle purposes, for pleasure, cross country, and following the hounds, while the American trotters and pacers are being used for racing and breeding purposes. All of the above-mentioned horses are bred and purchased principally in the States of Ohio, Illinois, Iowa, Missouri, Kansas, Michigan, Indiana, and Wisconsin, while some of the high-class hunters, cobs, and hackney horses are furnished to this market for export purposes by Canadian breeders and dealers.

DESCRIPTION OF HORSES.

Cab horses.—These should be from 15 to 15.1 hands high; color should be solid, either bay, brown, chestnut, or black; weight from 900 to 1,000 pounds; closely coupled, short back, small head and ear, good substantial legs and feet, and a good disposition.

Omnibus and tramway.—Horses for this work should be low chunks, 15 to 15.2 hands high, weight 1,100 to 1,300 pounds, 5 to 7 years old, plenty of good, heavy bone and muscle; well ribbed up, round hips, solid color, and of light action; must be thoroughly broken to all harness.

Cavalry and artillery horses.—The demand for these horses seems to be very large—exceeding the supply, and buyers are constantly on the market desiring to purchase a class of horses having a combination of strength and endurance with the fine finish of a thoroughbred type. Color should be exclusively solid (dark bay or chestnut), height from 15.3 to 16 hands, having a long neck, small, fine-cut head, short ears, well-developed forehead, long, sloping shoulders, short back, closely ribbed; with plenty of substance; clean, strong legs, with a smooth, round foot; must be easy gaited, with not too high a knee action; more valuable if saddle gaited.

Van or draft horses.—The demand is good for the highest type of the American draft horse, which should be from 16 to 17 hands high, and weigh from 1,500 to 2,000 pounds—in fact, can not be too heavy; should be short legged, with plenty of bone and muscle; must be perfectly sound, closely coupled, with short back, heavy neck, small head and ears. The Shire breed is much preferred for the English market, and animals with plenty of long hair on legs are much desired also, while the Normans are accepted by Continental buyers. Color does not materially change the value, but the horses must have great substance, durability, and possess heavy and strong, clean bones;

large, round hoofs, not flat; sloping and powerful shoulders, short backs, well ribbed; smooth-turned hips, and should be kind in disposition, thoroughly true, and broken to single and double harness; also perfectly waywise.

Jobmaster or coach horses.—The demand for this class of horses is very large, and the supply is not equal to the demand. This class of horses should stand up not less than 16 hands high and weigh from 1,150 to 1,300 pounds; should have a long, breedy neck, short ear, wide and intelligent head, short back, well ribbed; round hip, clean legs, and not too large a hoof, which must be dark in color. The color of horses in demand is solid black, brown bay, chestnut, and dark sorrel. Black points are very desirable. They must be well broken to harness, carry a high head, with an easy, medium knee and hock action, free from interfering or forging.

Light jobmasters or coach horses should not be under 15.2 and no more than 16 hands high; color, bay, black, chestnut, or dapple gray; possessing a well-formed, long, arched neck, and an intelligent, breedy head; long, sloping shoulders, short back, close ribbed; medium-sized hoof; thoroughly broken to all harness; must not forge or interfere, and should have high hock and knee action, quick and active on their feet, thoroughly wise, and well broken to respond to the bit.

Cobs.—Cob horses should be of solid color, chestnuts, sorrel, and bays preferred; should weigh from 1,000 to 1,100 pounds, not over 15.1 hands in height, blocky, close ribbed, round hip, small head and ear, medium length neck, very high knee and hock action, flat, bony legs, medium hoof; should be quick and active on their feet, thoroughly broken to all harness; must be free and well gaited, yet not vicious, and, in the words of the horseman, be able to pull their knees up to their chin when trotting. This class of horses is in demand, especially for the Great Britain trade.

Heavy and light hunters.—While the demand is good for this class of horses, the requirements are such that but few of our American horses, especially from the Western States, can pass the inspection. The Eastern and Southern breeders of the United States are more successful in breeding and producing this kind of animal. The requirements are that they must be essentially three-quarter thoroughbred, well conformed, very short in the back, high withers, long, thin neck, small head and ear, deep chest and shoulders, round and heavy hip, with plenty of muscular power behind for propelling and jumping purposes; a good, clean, flat limb, with plenty of bone substance; solid color is preferred, but if other requirements are produced the color is not much of an object. They must be well broken for saddle, quick of action, sure footed, and able to show their ability to jump both fence and ditch of reasonable height and width, the heavy hunters carrying from 150 to 180 pounds; light hunters, from 120 to 150 pounds. Horses of this class have been purchased from Canada *in the vicinity* of Toronto, Simcoe, and other breeding districts of

Ontario, where they are being raised exclusively for this purpose, thoroughly broken and conditioned when they are brought to Buffalo by Canadian dealers and sold to foreign buyers.

Trotters and pacers.—This class of horses being originally an American production, the demand is increasing very rapidly for foreign trade. This is especially so in regard to Great Britain and Germany. I am informed by well-informed foreign horse dealers that the demand for this class of horses in the two above-mentioned countries has increased nearly 50 per cent during 1897, and is only surpassed by the quest for cavalry and artillery horses for army purposes. The trotting or pacing horse in reality need have no particular conformation or requirements, except when used for breeding or exhibition purposes, and, using the terms of American horsemen when describing this class of horses, the one great requirement is to have them "get there," or, in other words, extreme speed. Horses most in demand are those ranging from 15.2 to 16 hands high, color no object; where used for speed or racing purposes, weight from 1,000 to 1,300 pounds; must be well conformed, with great depth of shoulders and hips; must be free and pure gaited, without hitching, hobbling, interfering, forging, or knee knocking; must not have too much knee action; in fact, must go, as horsemen say, "low and close to the ground;" must be of good disposition, with plenty of endurance, and, of course, the more speed the better. Horses of this class are in great demand for breeding purposes in Great Britain and Germany, but there the requirements are more rigid regarding conformation, individuality, and extended pedigree, which must be well known and renowned as to speed, endurance, and producers of the same.

SOURCE OF SUPPLY OF THE DIFFERENT CLASSES.

All classes of van or draft horses are raised principally in the States of Ohio, Iowa, Illinois, and some in the Dominion of Canada. They are bred principally from imported stallions and mares of the English shire, Clydesdale, and French draft breeds. The shires, French, and half-bred natives of the above-mentioned breeds are the most desirable for the export trade.

Horses for cabs, tramroads, omnibuses, and other common uses are principally from the States of Ohio, Illinois, Iowa, Indiana, Wisconsin, and Michigan, also a few from the Dominion of Canada. These horses are usually bred from a smaller class of pure-bred Norman mares and horses, crossed with our American coach and driving horses, that have an individuality of activity, the proper size (weight from 1,200 to 1,400 pounds, height from 15.2 to 16 hands), and that show more than ordinary speed for road purposes.

The jobmasters (light and heavy), or what are termed American coach horses, are bred in nearly every State in the Union, but principally come from Ohio, Iowa, Kansas, Michigan, Kentucky, Tennessee, New York, and some from the Dominion of Canada. Horses of this

class are usually sired by the very best coach and trotting stallions, care being taken of course to procure sires that are well-marked individuals as to style, color, action, disposition, and speed. The mares are usually selected under the same conditions.

Cavalry and artillery horses have only been in urgent demand by the foreign trade within the last two or three years, therefore no particular care or effort has been made during the past by horse breeders to produce horses suitable for this purpose. However, the recent demand and good prices are inducing horse breeders who have an opportunity of procuring sires and dams suitable for producing this class of horses to pay particular attention to supplying the market with cavalry and artillery horses; and from information derived I am led to believe that the Southern States of Kentucky, Virginia, and Tennessee are intending to breed horses for this purpose, while the Western States of Michigan, Indiana, Kansas, and Iowa are also procuring such sires and dams as will be apt to produce this class of horses.

Cobs, heavy and light, are principally bred in New York State, Dominion of Canada, some parts of Virginia and Kentucky, and largely in Montana and Kansas. They are usually from either thoroughbreds or three-quarter-bred sires and dams.

Trotting and pacing horses are bred in nearly every State in the Union, although New York State, Michigan, Kansas, Wisconsin, Kentucky, and Tennessee seem to predominate in raising the class of trotters and pacers that find the most ready sale to our export buyers. No general rule can be given regarding their particular breeding. Experience has taught us that in breeding horses for trotters and pacers, several things are necessary to insure for them a ready sale either on the home or foreign market. The one great demand and requirement is speed, while beauty, individuality, size, etc., are secondary considerations.

NUMBER OF HORSES EXPORTED FROM BUFFALO, N. Y.

From the most reliable information I have been able to obtain I find that during the year 1896 25,000 draft horses, about 15,000 cab, tramroad, and omnibus horses, and about 12,000 cavalry, artillery, light and heavy van, jobmasters, and coach horses, cobs, hunters, trotters, and pacers were exported.

PRICES PAID BY FOREIGN BUYERS.

Draft and van horses average in price from $100 to $300 each; omnibus and tram horses, $70 to $100; cab horses, $50 to $75; heavy coach or jobmaster horses, $150 to $300; light coach horses, $100 to $300; artillery and cavalry horses, $140 to $160; light and heavy hunters, $150 to $300. Trotters and pacers vary greatly in price, depending

upon the individuality, amount of speed, pedigree, etc., and bring from $200 up to $2,500 each.

EXPENSE OF SHIPPING.

From New York on steamer on the following lines, viz, White Star, Atlantic Transport, Leyland Line, German Lloyd, Dominion, Warren, and Phœnix to English points, the expense of shipping is $20 per horse; to France $30, to Germany $30, to Belgium $30. These prices are freight only. Horses are placed in stalls 2 feet wide and 10 feet long on board the boat. Their feed consists of a liberal allowance of hay and grain, with a small quantity of wheat bran. To every twenty horses is allowed a care taker, whose duty is to constantly watch, feed, and care for this number of horses.

LOSSES BY DEATH.

The loss by death will not exceed 2½ per cent, and is usually the result of long shipment, impure water on boat, bad ventilation, poor food, lack of attention, and such diseases as influenza, strangles, and pneumonia.

LOSS IN WEIGHT.

Experience proves that 90 per cent of the horses exported lose in weight from 25 to 60 pounds during their voyage across the ocean.

REMARKS.

The prices I have given in the within-mentioned report are the prices paid by the exporter at either private or public sale, while the prices obtained in foreign countries I can not give in detail; but from the best information I can obtain the profit realized on each animal runs from $25 to as high as $150 in exceptional cases, and is satisfactory in most cases. Export dealers have informed me that they have realized a very satisfactory profit; that the profits vary in foreign countries the same as in our own; that horses are not always sold on their merits; that a great deal depends on the customer taking a liking to the individuality of the horse, and paying for this only. Of course, as in all other marketable products, the prices depend largely on the demand and supply; but upon horses properly selected by competent judges, and purchased for fair prices, with the shipments not too long to the seaboard, and fairly good weather during the voyage, sold by men in foreign countries who are good judges of horses, responsible, and of good reputation for fair dealing, there is certainly every reason to expect a good and satisfactory profit. The future prospects for the export horse trade are certainly very bright and promising, and there can be no doubt but that all the better classes of American horses will find purchasers at good prices for shipment to foreign countries. The American farmer and horse breeder real-

izes that to find a ready market for the horses he raises he must cater largely to the wants of the export trade, and breed such horses as there is a demand for. I am informed by horse dealers who are frequenting all parts of the United States, purchasing horses for the Buffalo market, that from the information which they derive from farmers and horse breeders, every effort is being made by them to procure suitable sires and dams for producing the class of horses demanded for the export trade, especially the cavalry, artillery, and coach horse. The very low prices that have been obtained by the farmer for the past few years have caused a shortage in the production of all classes of horses, while the demand for the past eight or ten years for a cheaper class of common horses, such as are used by American street-car lines and for other similar purposes, has been largely done away with by the substitution of electricity as a motive power and by the large use of bicycles, and on account of the financial depression of the entire country during the past few years. These causes have naturally forced the farmers and horse breeders who have been raising and breeding horses of an inferior class, without regard to any quality whatsoever, to discontinue the raising of horses of this kind. This really has been a boon to the horse trade of the future, as all inferior stallions have been castrated and either turned loose on the prairie to obtain their own living or sold for some ordinary draft work, while brood mares of the inferior class have also been disposed of. This fact has left nothing but the better bred or high class horses to breed from in the future. This, coupled with the knowledge that the farmer has acquired regarding the necessity of raising a class of horses which will find a ready sale both for foreign and home consumption, and the encouraging and large demand of foreign countries for the American horse when suitably bred, points to but one conclusion, and that is that the future prospects of the sales of American horses to foreign countries is extremely good, and one that warrants horse dealers and breeders in using every effort in their power to improve the quality and breed of horses so as to insure their receiving a suitable price and a large demand. There is no doubt but that the American horse, properly bred, has proven his superiority over all other horses in any part of the civilized world.

Buyers and dealers of American horses for the export trade express themselves in a way which signifies that they are of the opinion that some action should be taken by the American Government in the way of inspection and supervision of shipment, both by rail through the States and also on board of the ocean steamers, in order that, by a proper inspection of each individual horse, guaranteeing his health and freedom from diseases of a contagious nature.

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55TH CONGRESS, 3d Session. } SENATE. { DOCUMENT No. 36.

COMMANDER GEORGE T. DAVIS, U. S. N.

DECEMBER 9, 1898.—Referred to the Committee on Naval Affairs and ordered to be printed.

Mr. WARREN presented the following

STATEMENT PREPARED BY CAPT. C. E. CLARK, COMMANDING BATTLE SHIP OREGON, U. S. N., IN THE CASE OF COMMANDER GEORGE T. DAVIS, U. S. N., WHOM CONGRESS IS NOW PETITIONED TO ADVANCE ONE GRADE ON THE RETIRED LIST FOR HEROISM NEVER YET REWARDED OR EVEN FITLY RECOGNIZED.

[To accompany S. 5031.]

For his gallantry in the attack upon Fort Fisher, Ensign George T. Davis was not only unrewarded, but five members of his class were advanced two grades for their services in the very assault in which he distinguished himself above all others.

This assertion is one that can be proved by the records at the Navy Department.

The facts will be here set forth, supported by extracts from official reports, and the way in which these reports can be referred to will be stated.

In the naval assault upon Fort Fisher, where 300 men were quickly struck down, Ensign George T. Davis was the only officer, with the exception of a master's mate (the latter being wounded), who passed the stockade and advanced to the ditch. Even when the attempt to storm had failed he fired his revolver at an officer on the parapet who was directing the fire poured into the broken and retreating column.

Lieut. Commander C. H. Cushman, who commanded one of the three assaulting battalions, in his report says:

> The men advanced excellently to the stockade, although numbers of them fell; but here a momentary check occurred, owing to the narrowness of the breach in the stockade, which was fatal. The enemy increased his fire, and, unable to return or stand up to it, the column finally gave way and retreated in a body to the starting point, utterly refusing to be rallied. The fleet captain, a large number of officers, and some men from the different vessels were left abreast the stockade under the fire of the enemy. Among these were Ensign Davis and three men from this vessel who had succeeded in reaching quite to the ditch of the fort, unable to advance or retreat. (See report of Lieutenant-Commander Cushman, executive officer of the U. S. S. *Wabash*, dated January 16, 1865, which will be found in the Report of the Secretary of the Navy for the year 1865.)

Lieut. Commander James Parker, the ranking officer in the assault (but who waived his right to command on learning that the duty had been assigned to the fleet captain, Lieut. Commander R. F. Breese), says in his report:

> The enemy began to cheer, and at once concentrated their whole fire upon the small band who had not fled. In an instant four officers, Lieutenant-Commander

Cushman, Acting Ensign Frederick A. O. Conner, Acting Masters' Mate Joseph M. Simms, and A. F. Aldrich (of the *Tuscarora*), were wounded and fell at my side. I saw that any further attempt at advance with our small number would be folly, and so ordered all who were left to seek the protection of the angle, "B," of the palisades. This we did, and remained there until dark, all the while exposed to the enemy, who never failed to fire at anyone who showed himself. After dark we all came safely away, bringing our wounded, our colors, and our arms. Five gallant fellows, viz, Acting Ensign George T. Davis, of the *Wabash*; Acting Masters' Mate Aldrich, of the *Tuscarora*; Louis C. Sheppard, sailor, of the *Wabash*; one man (name unknown to me), a petty officer from the *Tacony*; and a private of marines, Henry Thompson, of the *Minnesota*, got a few paces beyond "B." Mr. Aldrich was severely wounded and the petty officer was killed. (See report of Lieut. Commander James Parker, U. S. S. *Minnesota*, dated January 16, 1865, which will be found in the Report of the Secretary of the Navy for the year 1865.)

When the promotions were made after the war for meritorious conduct five members of the class to which Davis belonged, viz, McGregor, Harris, Cassel, Evans, and Coffin, were advanced to the grade of lieutenant for having distinguished themselves in the assault upon Fort Fisher. Davis states that Cassel, now deceased, declared in his presence that he (Cassel) would protest to the Secretary of the Navy against being promoted while his (Davis's) superior claims remained unrecognized. This statement of Cassel's became a matter of public repute in the service. Coffin, now a captain on the retired list, says in a letter to Davis, a copy being herewith appended, "I always felt that you suffered great injustice."

The dissatisfaction occasioned by these promotions, resulting as they did in strong appeals by several who felt that they had equal claims for advancement, and by the protests on the part of the remaining members of the class who urged that they should not be injured by having an additional number pass over them, caused Congress to decide that it would be unwise to make any further changes on the active list.

Commander Davis was retired in the year 1889, having broken down while at sea in command of the *Juniata*, and when war with Spain was declared immediately applied for duty. All his class are now on the captain's list, and it would only be an act of justice to advance him to that grade, as no one would be affected by his promotion on the retired list, and his conspicuously heroic conduct, which should have distinguished him above even those who were advanced two grades, would receive a deserved and honorable recognition.

If the extracts from the official reports herein quoted do not show that to Commander George T. Davis belongs the right to be called the hero of the naval assault upon Fort Fisher, it is respectfully submitted that nothing can ever be found that will raise a doubt as to the preeminence of his claim. Certainly the situation described in the reports of Lieutenant-Commanders Parker and Cushman, where a young officer stands with three or four companions at the extreme point of advance in a desperate charge, appeals to that spirit in the service which can be so wisely fostered by recognition.

C. E. CLARK, *Captain, U. S. N.*

Officers who can be referred to with reference to the facts in this case:

Capt. A. S. Crowninshield, Chief of Bureau of Navigation.

Capt. Robley D. Evans and Capt. George W. Coffin, the two officers now remaining in the service of the five in Commander Davis's class who were advanced for bravery at Fort Fisher.

Capt. F. A. Cook, member of the class to which Commander Davis belonged.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, TWELFTH DISTRICT,
San Francisco, Cal., October 20, 1898.

SIR: Regarding your gallantry and service in the naval land attack upon Fort Fisher, N. C., in which you commanded the leading company, if I remember rightly, I have always felt that you suffered great injustice and that your services at Fort Fisher certainly richly deserved proper recognition by the Government.

If at any time it should be in my power to assist you in obtaining promotion on the retired list, or such other reward as you may think proper, I am always yours to command, and most sincerely wish you all success.

Yours, very sincerely,

GEO. W. COFFIN,
Captain, United States Navy (Retired).

Commander GEORGE T. DAVIS, U. S. N.,
Asheville, N. C.

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 37.

EXPENSES INCURRED BY VIRGINIA IN EQUIPPING, ETC., TROOPS.

LETTER

FROM

THE ACTING SECRETARY OF THE TREASURY,

TRANSMITTING,

IN RESPONSE TO RESOLUTION OF THE SENATE OF DECEMBER 14, 1898, CORRESPONDENCE RELATIVE TO THE AMOUNT DUE THE STATE OF VIRGINIA AS REIMBURSEMENT EXPENSES INCURRED IN EQUIPPING, SUPPLYING, OR TRANSPORTING THE VOLUNTEER TROOPS OF THAT STATE DURING THE PRESENT YEAR.

DECEMBER 19, 1898.—Referred to the Committee on Military Affairs and ordered to be printed.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., December 16, 1898.

SIR: The Department is in receipt of Senate resolution of December 14, 1898, as follows:

Resolved, That the Secretary of the Treasury be, and he is hereby, directed to inform the Senate whether or not payment of the amount due the State of Virginia as reimbursement expenses incurred in equipping, supplying, or transporting the volunteer troops of that State during the present year, or any part thereof, has been withheld, and if so for what reasons; and to transmit to the Senate any correspondence on the subject between the officials of the Treasury Department and those of the State of Virginia.

In reply thereto I have the honor to state that payment of the amount certified by the Auditor for the War Department to be due the governor of the State of Virginia for clothing and shoes furnished for the use of certain regiments of Virginia volunteers has been withheld under a recent decision of the Comptroller of the Treasury, the State of Virginia being indebted to the United States for certain nonpaying and other Virginia State stocks and bonds now belonging to the United States.

I inclose herewith a copy of the decision of the Comptroller and copy of a letter addressed to the governor of Virginia on the subject of the claim referred to.

Respectfully, yours,

O. L. SPAULDING,
Acting Secretary.

The PRESIDENT OF THE SENATE.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., December 3, 1898.

SIR: In reply to your communication of the 30th ultimo, relative to the claim allowed by the Auditor for the War Department in the sum of $2,957.81 for clothing and shoes furnished to the United States for the use of the Second, Third, and Fourth regiments of Virginia Volunteers, I inclose copy of the decision of the Comptroller of the Treasury, dated November 21, 1898, withholding payment of the claim on account of the indebtedness of the State of Virginia to the United States.

Respectfully, yours,

O. L. SPAULDING, *Acting Secretary.*

Hon. J. HOGE TYLER,
Governor of Virginia.

TREASURY DEPARTMENT,
OFFICE OF COMPTROLLER OF THE TREASURY,
Washington, D. C., November 21, 1898.

SIR: In your communication of the 15th instant you submit the following for my decision:

The Auditor for the War Department has certified to the Secretary of the Treasury (division of bookkeeping and warrants) for repayment to the governor of Virginia from the appropriation for "Clothing, and camp and garrison equipage, January 1, 1899," a claim amounting to $2,957.80, for clothing and shoes furnished for the use of certain regiments of Virginia Volunteers.

The State of Virginia being indebted to the United States for certain nonpaying and other Virginia State stocks and bonds now belonging to the United States (House Doc. No. 263, Fifty-fourth Congress, second session), the question is submitted for your consideration whether, under the provisions of the act of March 3, 1875 (18 Stat., 481), the Secretary of the Treasury should withhold payment of the claim and apply the same as a partial payment on the indebtedness of the State of Virginia.

It appears that prior to 1861 certain Indian trust funds were invested by the Secretary of the Interior in certain State stocks of the State of Virginia, amounting to $540,000; that by the act of June 10, 1876 (19 Stat. L., 58) these stocks were directed to be transferred to the Treasurer of the United States, whose duty it was made to collect the interest falling due thereon; that the principal of the stocks became due and payable January 1, 1894, and that in May, 1894, payment of the principal and accrued interest (none of which had been paid) was demanded and refused.

By the act of August 15, 1894 (28 Stat. L., 311), the Secretary of the Treasury was authorized and directed to place upon the books of the Treasury, to the credit of the several Indian tribes interested therein, the face value of certain nonpaying State bonds or stocks, and provideed that—

Thereupon said State bonds or stocks shall become the property of the United States.

Congress has also annually appropriated moneys for the payment of the interest on these stocks.

It thus appears that the State of Virginia is indebted to the United States in the amount of these State stocks and the interest accrued thereon.

Section 3481 of the Revised Statutes provides:

Whenever any State is in default in the payment of interest or principal on investments in stocks or bonds issued or guaranteed by such State and held by the United States in trust, the Secretary of the Treasury shall retain the whole, or so much thereof as may be necessary, of any moneys due on any account from the United States to such State, and apply the same to the payment of such principal and interest, or either, or to the reimbursement, with interest thereon, of moneys advanced by the United States on account of interest due on such stocks or bonds.

The act of March 3, 1875 (18 Stat. L., 481), also provides:

That when any final judgment recovered against the United States or other claim duly allowed by legal authority shall be presented to the Secretary of the Treasury for payment; and the plaintiff or claimant therein shall be indebted to the United States in any manner, whether as principal or surety, it shall be the duty of the Secretary to withhold payment of an amount of such judgment or claim equal to the debt thus due to the United States; and if such plaintiff or claimant assents to such set-off and discharges his judgment or an amount thereof equal to said debt or claim, the Secretary shall execute a discharge of the debt due from the plaintiff to the United States. But if such plaintiff or claimant denies his indebtedness to the United States, or refuses to consent to the set-off, then the Secretary shall withhold payment of such further amount of such judgment or claim as, in his opinion, will be sufficient to cover all legal charges and costs in prosecuting the debt of the United States to final judgment. And if such debt is not already in suit, it shall be the duty of the Secretary to cause legal proceedings to be immediately commenced to enforce the same, and to cause the same to be prosecuted to final judgment with all reasonable dispatch. And if in such action judgment shall be rendered against the United States, or the amount recovered for debt and costs shall be less than the amount so withheld as before provided, the balance shall then be paid over to such plaintiff by such Secretary, with six per cent interest thereon for the time it has been withheld from the plaintiff.

These statutes are declaratory, the right of set-off being a common right. In Gratiot *v.* United States (15 Pet., 336, 370) Mr. Justice Story, in the opinion of the court in considering the right of the United States to set off a balance due from an officer on account against an amount due him for pay and emoluments, said:

It is but the exercise of the common right which belongs to every creditor to apply the unappropriated moneys of his debtor in his hands in extinguishment of the debts due him.

These two statutes are in pari materia, and are to be read together. The provisions of section 3481 are specifically applicable to this class of cases, while the act of March 3, 1875, is general in its provisions. The latter statute, however, contains provisions which are not contained in the former. I am therefore of the opinion that section 3481 is exclusively applicable to this case, so far as its provisions extend; but that the provisions of the act of March 3, 1875, requiring legal proceedings to be immediately commenced to enforce the claim, in case the claimant refuses to consent to the set-off, and the withholding of a further amount to cover all legal charges and costs in prosecuting the debt of the United States to final judgment, apply in addition to the provisions of section 3481.

It is to be observed that the provisions of section 3481 relates to stocks or bonds of a State "held by the United States in trust," and that these stocks are now owned by the United States. But when the United States, in pursuance of the act of Congress, assumed the obligations of the trustee it must be held to have become subrogated to all the rights of the trustee in respect to these stocks. Moreover, the statute specifically provides for withholding the payment for "the reimbursement, with interest thereon, of moneys advanced by the United States on account of interest due on such stocks and bonds."

It is to be further observed that there is a doubt whether a suit against a State is contemplated by the act of March 3, 1875. (See 2

Lawrence, First Comp. Decs., 326, 327.) As the prosecution of such a suit would devolve upon the Attorney-General, I will express no opinion upon that question.

I have the honor, in reply to your question, to state that in my judgment it is the duty of the Secretary of the Treasury, in pursuance of the statutes referred to herein, to withhold payment of this claim.

The certificate of the Auditor is herewith returned.

Respectfully, yours,

R. J. TRACEWELL, *Comptroller.*

The SECRETARY OF THE TREASURY.

O

55TH CONGRESS, 3d Session. } SENATE. { DOCUMENT No. 38.

MUNICIPAL MATTERS IN THE DISTRICT OF COLUMBIA.

DECEMBER 19, 1898.—Referred to the Committee on the District of Columbia and ordered to be printed.

Mr. MCMILLAN presented the following

COPIES OF CERTAIN PAPERS RELATING TO MUNICIPAL MATTERS IN THE DISTRICT OF COLUMBIA.

REPORT OF A COMMISSION OF EXPERTS CONCERNING THE AGRICULTURAL UTILIZATION OF VIENNA SEWAGE.

[Translated by Capt Lansing H. Beach, Corps of Engineers, U. S. A.]

A large number of sewers empty into the Danube Canal in Vienna along both its banks and carry to the river the sewage from over 1,000,000 people in the thickly built portion of the city. By the national law of July 18, 1892, concerning the accomplishment of the commercial plan in the national capital and residence city of Vienna provision was made among other things for the construction of trunk intercepting sewers which should take the sewage and carry it to the main channel of the Danube. In the law the future utilization of sewage for agricultural purposes was kept in view, as appears by the following quotation from Article V:

> In preparing the project for the intercepting sewers, consideration will be so given to the future irrigation of the Marchfeld, with the contents of these intercepting sewers, that the construction of a system for the purpose of this irrigation will be rendered possible.

With similar intent the House of Deputies had, on May 18, 1892, adopted the following resolution:

> The Government is requested to cause information to be collected concerning the manner in which the closet material of the city of Vienna can be reasonably made available for agriculture.

In order to give effect to these resolutions and to submit such weighty questions relating to agricultural matters to a detailed discussion and examination, the ministry of agriculture convened a commission of experts, which assembled May 8, 1893, under the chairmanship of his excellency the minister of agriculture, Count Falkenhayn.

The following took part in this inquiry:

His excellency the minister of agriculture, Julius, Count Falkenhayn, as presiding officer.

As representative of the royal and imperial minister of the interior: Franz Wetschl, member of the royal and imperial council.

As representative of the governor of the Lower Austria: Ernst Oser, royal and imperial member of the council to the governor, and Otto

Ritter von Freydenegg, royal and imperial member of the district council.

As representative of the lower Austrian chamber: Wilhelm Wodica, agricultural engineer.

As representative of the municipality of Vienna: Georg Rosenstingl, engineer and member of the council, and Joseph Kohl, chief engineer city board of public works.

As representative of the royal and imperial agricultural association in Vienna: Dr. Emerich Meissl, director of the royal and imperial chemical experimental station of agriculture in Vienna.

As representative of the Austrian engineers and architects' society: Johsun Ritter von Schon, royal and imperial member of council, Austrian professor in the Royal and Imperial University in Vienna.

Also the following:

Peter Freiherr von Pirquet, landowner, member of the Reichsrath and Landtag.

Dr. Emil Perels, Austrian professor in the Royal and Imperial University for Agriculture in Vienna.

Johann von Podhagsky, civil engineer authorized by the commission.

The following attended from the royal and imperial bureau of agriculture:

His excellency, Dr. Ferdinand Edler von Blumfeld, chief of division.

Anton Ritter von Rinaldini, chief of division.

Anton von Pretis-Cagnodo, royal and imperial member of council.

Eduard Markus, royal and imperial member of council, technical expert for affairs of improvement as statistician.

Wilhelm Becker, royal and imperial member of council, technical expert for agricultural operations.

All present recognized the importance of the subject and were unanimous in the opinion that a smaller committee should first be selected which would make a preliminary collection of data, and in turn come before the expert commission with concrete propositions.

For this committee were selected Chief Engineer Joseph Kohl, Regierungsrath Eduard Markus, Prof. Dr. Emerich Meissl, Peter Freiherr von Pirquet, Civil Engineer Von Podhagsky, Ministerialrath Franz Wetschl, Agricultural Engineer Wilhelm Wodica.

The committee set itself to the task given it, and embodied its knowledge and views in a report submitted in May, 1894.

This report and its appendices were forwarded to all the members of the expert commission for information and examination.

At the final session of the commission, held November 24, 1894, this report was considered, and after a thorough discussion of the resolutions proposed by the committee, was adopted, being as presented, except for the addition to the last sentence of paragraph 7, upon the motion of Professor Schon.

REPORT OF THE SUBCOMMITTEE OF THE EXPERT COMMISSION CONVENED BY THE ROYAL AND IMPERIAL MINISTRY OF AGRICULTURE, UPON THE QUESTION OF THE AGRICULTURAL VALUE OF THE VIENNA SEWAGE.

For years the municipal authorities of all large European cities have regarded as one of their weightiest problems the removal of fecal matter and waste water beyond the boundaries of the city in a suitable and, above all, in a hygienic manner. Only seldom is consideration given to the idea to make this disposition in such manner as not to leave the valuable sewage unused as fertilizer, but to apply

it to agricultural purposes and thus to be able to turn it to the advantage of farming.

This question has also been repeatedly brought into discussion in Vienna in the course of the past ten years.

The commission of experts convened by the lower Austrian chamber in 1877 to examine the project of irrigating the March tract by means of an irrigating canal starting from the Danube opposite Greifenstein (Von Podhagsky), took this question quite thoroughly into their deliberations and expressed their conclusion in the following resolution:

The vicinity of the city of Vienna would cause it to appear very desirable to increase the fertilizing power of the water in a high degree by carrying the sewage of the city in the irrigating canals. The study of this weighty question is, however, so closely connected with the project drawn up in the first stage of the discussion for the sewerage of the city of Vienna that we must content ourselves with a reference to the important advantage for the irrigation which can eventually be secured.

Therefore it was to be expected that at this time, upon the occasion of the construction of the Vienna sewerage system and the completion of the "Vienna commercial plans," through the joint action of State, district, and city, the question, economically so important, of the agricultural value of sewage should again come to the front.

This feature of the programme was one of the most important when the royal and imperial ministry of agriculture convened a commission of experts May 8, 1893, for an expression of opinion. From the presentation of the case by his excellency the royal and imperial minister of agriculture it was seen that the problem consists as much in keeping in view the possibility of irrigating the Marchfelds with sewage as in discussing the question of commercial value of sewage in general.

The commission must, therefore, follow the initiative of the royal and imperial minister of agriculture as stated to find, if possible, a plan which would either promote farming and meadow culture of a large section or to create a fertilizing product in the condition which might exert a favorable effect upon agricultural production in general.

At the same session it was decided to intrust the already formed committee of seven with the work of holding the necessary preliminary conferences and, in due time, of making a report with suitable propositions to the commission.

As further special points for the preliminary conference of the subcommittee, the following resolutions of the commission were given it as instructions:

1. To ascertain the amount of plant food and the value of Vienna sewage, analyses of the latter are to be made.
2. Estimates of cost are to be worked out for collecting the sewage at the Stadlauer bridge or some other designated point, and for carrying it to the place for its application to filtration beds or to agricultural purposes.
3. Since the filtration of undiluted sewage in large quantities could not be recommended, investigations are to be made concerning its sedimentation in order that at least a portion of the plant food contained in it may be rendered available for agricultural purposes.
4. In view of the lack of knowledge which still exists with regard to several phases of the agricultural value of the city sewage, plans for experimental fields for irrigation in various ways are recommended, and particularly:
(*a*) For the raising of vegetables;
(*b*) For a system of mixed crops.
5. Study is to be given to the question whether a profitable and reasonable utilization can be made of the Vienna sewage by taking it through the canals to serve for the future irrigation of the Marchfelds, and if so, to what extent.
6. Projects and preliminary plans are to be prepared for carrying out the scheme of collecting and pumping the sewage at the Stadlauer railroad bridge.

7. It is to ascertain whether the utilization of the sewage according to the Hobohm plan of collecting it and transporting it in barges upon one of the canals crossing the Marchfeld in the direction of Gross Enzersdorf-Augern, after previous partial sedimentation, appears judicious, and if so, to what extent.

The problem which the committee had, therefore, to solve might well be designated as a very comprehensive one. It was the harder to treat, as the opinion had extended abroad so extensively, and particularly in agricultural circles, that it would be an easy thing to utilize the city's excretal products, and that it would be inexcusable not to provide for the proper application of the sewage and sediment so valuable as a fertilizer.

And yet it is proved to the contrary, if one gives consideration to the experiences of other cities, that where the fecal materials of a city are taken away by the water-carriage system, as in Vienna, no place has yet succeeded by raising it and applying it, either directly or prepared, to agricultural purposes as fertilizer, in bringing it into a condition even approaching a profit upon the capital expended.

Under the impression of a probably negative result to their investigations, the subcommittee had to begin its task, taking special care to proceed as thoroughly as possible.

The subcommittee feels honored in presenting the reports of its members to the commission of experts, and states its conclusions in the following:

The observations made establish the fact that at present the sewage discharge in Vienna is to be reckoned as about 1 cubic meter per second, and that in the course of years it may be expected to increase to 4 cubic meters.

The amount of fertilizing material contained in a cubic meter of sewage (including the sediment) is reckoned as worth between 0.9 cent and 3.9 cents. From this it is figured that at the present time (with 35.32 cubic feet discharge) the value of the fertilizing material per day is, in round numbers, $1,600 to $7,000, the value in the course of a year amounting to from $576,000 to $2,544,000.

Even by the statement of the lower figures it is evident that a considerable value is contained in this sewage. It is the more to be regretted that at present no means appear to be available either to transport or to work up this fertilizing material in a profitable manner. The trouble lies in the fact that the proportion of dissolved or suspended useful fertilizing material is so small compared to the volume of water and to the useless portion of the sediment.

There is found, for instance, according to the observations made, in each 1,000 pounds of sewage merely: Fertilizing material (dissolved) to the value of 0.36 cent; sediment to the value of 0.04 cent; total value, approximately, 0.4 cent.

These results are the average of only a comparatively small number of observations. Although it may be taken for granted that the numbers found will not differ essentially from the yearly average, still the measurements concerning volume of flow and the analyses must be systematically carried on for a longer period of time if entirely reliable results are to be obtained.

If, now, the problem were placed before us to investigate which of the existing most commonly encountered systems of agricultural utilization were best adapted to serve profitably for Vienna sewage, we would come to the following results:

A.—A direct transportation of these volumes, whether by wagon or boat, to be used directly as fertilizer upon the ground, is completely out of the question.

A wagon load of 70.6 cubic feet (4,410 pounds) of sewage would be worth merely from 2 to 8 cents.

Loads of such relatively small values do not permit transportation to any considerable distance, as would be necessary in order to be able to apply these large volumes profitably to extended agricultural surfaces.

B.—On account of too great dilution, the reduction to poudrette at a profitable price appears to be excluded.

To-day no process is known which might be available, in view of such extensive dilution, to separate from the water the constituents useful as fertilizer and to reduce them to useful and transportable form for agricultural purposes without a disproportionately great cost.

Experience teaches that poudrette factories can maintain themselves only with difficulty in those places where highly concentrated fecal matter is available, as, for instance, in the cases of the cask system or the Liernur system.

C.—Just as little can the sedimentation method be recommended at this date.

The large cost of the plant, as also the operating expenses, would be out of proportion to the desired price for the product, owing to the unfavorable proportion of fertilizer to volume of water and also to the small value of sediment.

A profit from such a system appears therefore to be out of the question.

D.—The utilization of the sewage by pumping and conducting it to a direct irrigation of agricultural lands offers great difficulties.

The Marchfeld on the left bank of the Danube would, both by character of ground and by extent, offer an opportunity for irrigation upon a large scale; but the examples before us of similar systems existing elsewhere do not permit the condition of probable profit from the plant to be regarded as secured. In Berlin, as in Paris, a great growth of plants is assisted by irrigation, but the interests of agriculture itself upon a large scale are not yet served, for this sort of fertilization is confined so far to comparatively limited areas; its use does not reach the farms of a whole region, but benefits more or less only special groups of favored parties. The establishment of the first plant encounters considerable difficulty also if the ground necessary is not held by one party; in the case of a previous irrigation system with clean water, an actual overfertilizing of particular tracts and consequently a great waste of fertilizing material occurs; a preliminary draining of the fields, consequently a very expensive preparation, is necessary—further matters which come in the way of realizing a profit.

The proper object, which, for example, the city of Berlin follows since it has taken upon itself the heavy cost of pumping the sewage and carrying it off for irrigation purposes, does not consist in the advancement of agriculture in general, but much rather in disposing of this sewage in a sanitary manner, so that it may be rendered harmless, and the Spree be less polluted. This condition does not occur in our case as Vienna is so fortunate as to be situated upon the mighty Danube, which even at low water has a flow of about 50,000 cubic feet per second, so that one can say unhesitatingly and without fear of contradiction that its fecal matter is thoroughly carried away.

When the further expensive crossing of the Danube is considered, whether by means of a dike or a bridge, a profit upon the cost of installation, judging from the examples of Paris and Berlin is not to

be expected, although in Paris (Gennevilliers) particularly large profits have accrued to the usufructuaries of the system.

We miss, therefore, in the method of a direct irrigation with undiluted sewage any previous supposition which would cause us to advise at the present time the execution of any such plan for the Marchfeld, and in no case can it be recommended until improved methods for such a disposition have become known or, in the case of this failing, the most thorough study has been undertaken.

With regard to the right bank of the Danube, this region is not adapted to irrigation upon a large scale, because, as far as can be determined without a detailed study, only a very limited area is available. The high ground lies at too great an elevation, and the raising of the sewage to it would be too expensive for any profit from the system to be at all probable. The immediate neighborhood of the city would still further diminish even this limited area, because the foul odor which the irrigation fields sometimes sends abroad would scarcely permit it to be established too close to the town.

But it must be strongly stated that there particularly the favorable opportunity appears to be offered to establish irrigation fields under favorable conditions even if only on a small territory.

As soon as the intercepting sewer on the right side has been completed, a pattern (experimental) plant can be created. The construction of such appears from several points of view as worthy of recommendation. It would first of all act to stir up and educate the people, and the irrigation would probably, in a manner similar to the case at Gennevilliers, near Paris, be extended in the course of a few years through the initiative of the people themselves living on the edges.

E.—Concerning the eventual conduction of Vienna sewage by a trunk canal to the projected Marchfeld irrigation system, it may be said that particularly favorable conditions would be offered by such an arrangement.

Upon the basis of the lower figures computed in Appendixes I and II as to the value of Vienna sewage, and taking 30 per cent of this value as lost by flushing the intercepting sewers, etc., as well as charging the construction of a bridge across the Danube to the cost of the undertaking, so that, after cautious calculation, a profitable return of more than 5 per cent upon the capital results from the value of the fertilizer supplied and its complete use.

To be sure, the opinion has been expressed that by the so-called "self-purification of a river" a very considerable escape in value of fertilizing material must result, which would make any calculation for return of profits appear doubtful.

These unfavorable suppositions can, however, not be recognized as valid without further evidence. It would be very desirable by scientific research, by practical experiments, and by examination of each place where similar conditions exist, to obtain a complete answer to the question, whether and how far the sewage retains its fertilizing properties with strong dilution and long transportation, and it might be recommended to the royal and imperial ministry of agriculture to take the proper initiative in this matter.

The irrigation of the Marchfeld exists so far only as a project. However desirable its accomplishment may appear, it seems to be still in the distant future. In spite of this it can be stated outside of the above question that the project itself, with its completion, that is, the conduction of Vienna sewage, will undergo a detailed reexamination. For if the indicated uncertainties are removed, and the value

of the sewage determined by further experiments, and the estimates of cost known by detailed projects to be correct, it would then follow: That by the completion of this combined project 87,500 to 172,500 acres, and also an entire district would share in the fertilizing; that this district would be in condition to receive the expected greater flow of sewage in the future; that further, there would be some prospect for a profitable return from the undertaking, and that also, as far as human foresight goes, in this manner the question of agricultural value of Vienna sewage could be properly solved.

Considering these conditions the subcommittee moves that the expert commission take cognizance of this report and adopt the following resolution:

It is stated with satisfaction that the extension of the Vienna main intercepting sewer is approaching completion in the near future, and that it offers the possibility hereafter of collecting the sewage in one suitable place to be raised and transported for utilization.

The sewage contains fertilizing material which is of special value for agriculture. Its utilization offers a great politico-economical interest, and no efforts should be spared to find the correct means to render this utilization possible, and by that means prevent such rich fertilizing material from continuing to flow to waste.

The extraction and utilization of the fertilizing material encounters, however, great difficulties, here as well as elsewhere, as soon as a profitable return upon the amount expended is demanded.

The portion of fertilizing material to the volume of water and the worthless heavy materials is, according to observation hitherto made, so unfavorable that a direct carrying of the sewage by wagon or boat to the fields appears, even for small distances, to be out of the question.

This unfavorable proportion of mixture brings also the difficulty that according to the present state of experience and methods, the cost of separating the fertilizing materials suitable for agricultural purposes by manufacture of poudrette or by sedimentation would not stand in any allowable ratio to the cost of the product obtained.

The direct irrigation with undiluted sewage, according to the irrigation system applied in Berlin, for example, has not yet been extended to an entire district, and is serviceable chiefly only to a group of interested parties. The methods of irrigation so far in use demand large special and general expenses. By the construction of an irrigation system for the Marchfeld the necessity for a crossing over the Danube River would increase the first estimate to such an unfavorable extent that it would fall as a burden upon a relatively limited area.

The profitableness of such an undertaking appears therefore highly questionable and the construction of such an irrigation plan for the Marchfeld can not therefore be advised, at least until such time as by the perfection of preceding methods a satisfactory success shall have been obtained.

In the case of carrying out the irrigation of the Marchfeld, by running the water in a canal from the Danube at Kornenburg, it would appear possible, according to the foregoing data, to take the sewage in the trunk canal. The considerable cost, however, which this conduction would require, would be divided over an area of from 87,500 to 172,500 acres. In spite of the increase of cost the irrigation undertaking itself offers a correspondingly greater prospect of a profitable return by the introduction of the sewage. The careful study of such a particularly desirable plan is therefore the more earnestly recommended to the royal and imperial ministry of agriculture, as it concerns the increase of productivity of an entire district. These studies should be also extended to the question whether this method of disposing of fecal matter was not opposed to some sanitary considerations, particularly in the case of a general silting up of the canal.

On the right bank of the Danube, which for the most part lies too high, opportunity is lacking for an irrigation system upon a large scale. On the contrary, however, the plan for a model irrigation system appears highly commendable as incitement and instruction for the agricultural population. This could be arranged as an experimental station, which would not only have important local questions to solve for the future, but would also serve the science in general, in that it would be in position to determine the question of a profitable utilization of the city's sewage, as also its actual value, by a thorough trial.

From the standpoint of realizing a profit from the Vienna sewage for agricultural purposes, there is no occasion to raise any objection against the partly completed plan of the trunk intercepting sewer.

As in the future the handling of the sewage—for example, the erection of a pumping plant for raising the water from the sewers—is to be taken into account, it appears desirable to reserve the necessary area in the vicinity of the highway bridge in order at the proper time to be able to establish this plant and connections without difficulty.

VIENNA, *May 30, 1894.*

I.—RESULT OF THE MEASUREMENT OF THE FLOW OF WASTE WATER IN THE INTERCEPTING SEWERS.

With the object of measuring the waste water flowing in these sewers, overflow weirs were built in them and the quantity of flow was calculated from the depth of overflow.

These weirs were set up in the sewers close to their outlets into the Danube Canal, and the readings of the depths of overflow were obtained during intervals of from three to six hours during four days and four nights, during the period from September 4 to 16.

The results of these measurements and observations are set out in Table I, and in it are also the volumes of waste-water discharge in the other sewers, estimated upon the basis of experience.

The table furthermore contains the estimate of the effect upon the quantity of flow of the rainfall occurring before and during the period of measurement, and also the stage of water in the Danube Canal given occasionally.

The latter permit a conclusion concerning the ground water level of District II and partially also for Districts I, III, and IX. During the entire time of gauging the ground water level was higher than the sole of several sewers in District II, and considerably higher than the sole of the Brigittenan intercepting sewer, which explains the actual discharge of this sewer (1.7 cubic feet per second). Both the rainfall as well as the ground water carried off by the sewers exercised a considerable effect upon the volume of sewage during the time of observation.

As is seen by Table I, there will be tributary to the right and left main intercepting sewers, after their completion, a built-up area of 86,250 acres, with a population of 1,315,000 persons. This area was, at the time of gauging, furnishing 38.4 cubic feet of sewage per second to the Vienna Danube Canal. Each acre of built-up area, therefore, contains an average of 152 people, and supplies, according to the results of the measurement, 1 cubic foot of waste water daily to the sewers.

The consumption of public water which is determined each day at the reservoir by measurement of the effluent, amounted at the time of the observations for sewage almost constantly to 1,123,000 cubic feet per day, or to 29.7 cubic feet per second, while according to Appendix A the discharge from the sewers was 2,315,270 cubic feet per day, or 38 cubic feet per second.

Leaving out of consideration the always considerable amount of public water which is used for sprinkling the streets and gardens, and which is mostly evaporated, the volume of water supplied upon the days stated amounts to only 78 per cent of the quantity discharged by the sewers, therefore at least 22 per cent of the calculation must be set down as water drawn from wells and to ground water and rain water.

The results obtained agreed, therefore, with the approximate measurements made by the city engineer's office upon several occasions, at times of long drought and deep ground-water level, to determine the total amount of waste water discharged by the sewers, which is shown to be between 25 and 28 cubic feet per second.

It follows from these statements that both main intercepting sewers in the near future, under normal conditions, will hardly deliver a larger quantity than 35 cubic feet of waste water per second.

As further may be understood from Table I, the main trunk intercepting sewers are so designed that they will be able in the future to carry the computed volume of 168.8 cubic feet per second from a population of 3,712,000—that is, from nearly three times the present number.

Should, therefore, works for gaining a revenue from the city's sewage be built, they must at first be constructed for a constant sewage flow of 35 cubic feet per second, but consideration must be given to their extension to a capacity of 141 cubic feet per second.

The flushing of the sewers will exert a considerable influence upon the value of the sewage, and consequently upon the possibility of obtaining any definite profitable return from it.

In the preparation of the plans for the trunk-intercepting sewers, special provision is made for flushing them, for at several points on the intercepting sewers flushing inlets are provided, through which water can be turned into the trunk-intercepting sewers from the Danube Canal. By these means the computed present volume of sewage of 35 cubic feet per second experiences an increase to 141 cubic feet per second, and one part of sewage is diluted by three parts of river water. During the flushing, therefore, a given amount of fertilizing ingredients will be carried in four times the ordinary quantity of water.

This disadvantage may be partially diminished, at least, if the municipal authorities cause the flushing of the intercepting sewers by river water to be done only at a fixed time of day and for about three hours daily. As the cleanliness of the sewers under normal conditions can be maintained only by flushing daily, no objection should be raised against this method of operation.

II.—RESULTS OF THE ANALYSIS AND VALUATION OF VIENNA SEWAGE.

[Prof. Dr. Meissl and Chief Engineer Kohl.]

Samples of water were taken at different times of the day from the six sewers named in Appendix I, which carry about 71 per cent of the total volume of Vienna water. The result of the chemically analytical investigation and valuation made upon these water samples is shown in Table II, in which is also stated the value of the excremental contents in proportion to the number of inhabitants.

In explanation of the table the following will be noticed:

The direct investigations were made, as already stated, upon the contents of the sewers indicated in Table I by the item numbers 5, 7, 9, 10, 12, and 14, while in the next to the last line are placed the measured average value for the nine sewers carrying the remaining 29 per cent of volume obtained from earlier inferences as well as results of differently conducted investigations.

The heading *b* shows how many pounds of sediment are contained in 1,000 cubic feet of water from the sewer. The considerable amount of sediment in the Als-Bach (95.53 pounds per 1,000 cubic feet of sewer water) is attributed to the fact that the brook in its upper course runs through an unpaved channel, and therefore carries with it a good deal of earthy matter and solid heavy materials, which are brought into the sewer in large quantities. Moreover the districts lying adjacent to the Als-Bach have no measured water supply—according to the heading *g* of Table II there are only 1.4 cubic feet of sewage discharge per capita daily—on which account the sewage is naturally more concentrated than in other sewers.

The considerable amount of sediment in the two Cholera sewers (84.29 and 72.43 pounds per 1,000 cubic feet of sewer water) has its cause in the numerous factories connected to them, among which the tanneries, dye houses, and the soap factories particularly deliver a large quantity of solid materials to the sewers.

On the other hand, the relatively small quantity of sediment in the Brigittenauer, the Favorite, and the Ring street intercepting sewers (19.98, 23.73, and 23.73 pounds per 1,000 cubic feet of sewer water) finds its explanation for the first two in the considerable quantity of ground water which these sewers were carrying at the time of taking the samples, and in the case of the last named in the large use of public water in the district tributary to it, as well as in the entire absence of sediment-bearing factory water.

The amounts of sediment are accordingly extraordinarily variable. According to the investigations made they vary between 19.98 and 95.53 pounds per 1,000 cubic feet of sewer water; they are dependent upon the fall of the sewer, the nature of the pavement of the street (whether block or cobble) and its cleanliness, the extent of sprinkling, etc.

It has been observed in other places that the quantity of suspended material in the sewage is far greater in the winter months than in the summer months, and it is true that the higher value is mainly due to the increase of organic precipitable matter. Their tests concerning the amount of suspended matter also show extraordinary differences. The Frankfort sewage contains 36.72 to 116.09 pounds per 1,000 cubic feet of water from the sewer, the Berlin sewage 16.49 to 116.53 pounds of suspended material.

The average quantity of sediment transported by all the Vienna sewers is 172 pounds daily for each 1,000 inhabitants.

The volume of sediment contained in the daily sewer flow of 3,317,148 cubic feet at an average of 68.06 pounds of precipitable matter per 1,000 cubic feet of sewage, amounts therefore to 225,726 pounds, which, according to Table II, column *f*, possesses a value of $997.44 in comparison with artificial fertilizer, and a value of $226.08 per day in comparison with stable manure.

Chemical investigation has shown that the plant-nourishing ingredients of the sediment and sewage of the individual sewers is very variable, as can readily be seen from the following table:

Chemical composition of Vienna sewage.

	Tabular number.					
	5.	7.	9.	10.	12.	14.
	Als-Bach and Währinger-Bach.	Ring street intercepting sewer.	Left Cholera sewer.	Right Cholera sewer.	Favorite intercepting sewer.	Brigittenauer intercepting sewer.
Composition of the sediment:						
Nitrogen ..... per cent	2.64	3.11	2.75	2.17	2.87	3.62
Phosphates ..... do	1.34	1.56	2.07	1.27	1.70	1.90
Potash ..... do	1.02	.63	.52	.93	.94	1.22
Composition of the sewage after separation of the sediment in each 1,000 liters:						
Nitrogen ..... grams	352	179	197	160	160	84
Phosphates ..... do	73	30	26	20	25	20
Potash ..... do	203	100	136	120	92	85

The average of the foregoing analysis of sewage gives the proportion of nitrogen to phosphates to potash as 616:100:421, while in stable manure it is 167:100:200, and in artificial fertilizer it is ordinarily taken as 50:100:150.

For the valuation of the sewage and its sediment we can start either from the value of single plant foods in the artificial fertilizers or from its value in stable manure and stable liquid.

By the first calculation a very high value is naturally given on account of the concentrated form of the fertilizer, which for the case at hand is not applicable.

In the artificial fertilizers mentioned the price of the plant food can be taken in similar manner as in the sewage:

		Cents.
Nitrogen	per pound	$6\frac{1}{4}$
Phosphate	do	$2\frac{4}{100}$
Potash	do	$2\frac{27}{100}$

Upon the basis of these unit prices result the values given in the first sections of columns *d*, *e*, *h*, and *i*, of Table II, for the sediment and sewage carried by the different sewers.

The practical value of the sewage is obtained much more closely if comparison is made with the prices of plant foods in stable manure and its liquor.

220.5 pounds of stable manure delivered at the Marchfeld and spread out upon the field cost $2\frac{1}{2}$ to 5 cents, at the most perhaps $7\frac{1}{2}$ cents. Experience has shown that at a higher price the use of stable manure becomes unprofitable.

At the highest allowable price of $7\frac{1}{2}$ cents f r 220.5 pounds of stable manure and an average composition of manure of—

	Per cent.
Nitrogen	0.5
Phosphates	.3
Potash	.6

and with a value ration of nitrogen : phosphates : potash = 3 : 1 : 1, in the manure, or on account of greater ease of separation of the phosphates—of nitrogen : phosphates : potash = 6 : 3 : 2—in the liquor, the value is calculated:

	Cents.		Cents.
Nitrogen	9.4	Nitrogen	9.4
Phosphate	3.1	Phosphate	4.7
Potash	3.1	Potash	3.1

At a price of 2¼ cents per 220.5 pounds of stable manure these values are reduced to one-third. It is contended that the sewage has a composition much inferior to that of even a moderately good stable manure, because the relative proportion of the three plant foods (nitrogen, phosphates, and potash) is a very unfavorable one, and in consequence of which the sewage is to be regarded actually as merely a partially nitrogenous fertilizer. To take as a basis for the valuation of the sewage a higher figure than that corresponding to a stable manure price of 2¼ cents per 220.5 pounds, does not, therefore, appear to be justified; this gives

	Cents.		Cents
Nitrogen	3.1	Nitrogen	3.1
Phosphates	1.04	Phosphates	1.6
Potash	1.04	Potash	1.04

The calculations upon sewage made upon this basis gives the values quoted in the section of columns *d*, *e*, *h*, and *i* (Table II).

The relatively high test of the sewage test from the Ring street sewer (column *i*) can only be attributed to some chance, and can not be taken as a standard. The values of the sewage in the remaining sewers show no special or striking differences, except as their contents are affected by the previously discussed special conditions.

As a final result we have an average value of 21.59 cents or 95.08 cents for 1,000 cubic feet of sewage free from sediment, of 10 cents or 44 cents for 1,000 pounds of sediment, and of 25 cents or $1.11 per 1,000 cubic feet for the uncleared sewage, compared with stable manure and artificial fertilizer, respectively.

If for the determination of value of the daily flow of 3,317,148 cubic feet of sewage the price of artificial fertilizer is taken for a basis, the sewer water (Table II, column *k*) has a value of $6,054.24 per day, and the sediment (Table II, column *f*) has a value of $997.44 per day, and the uncleared sewage therefore has a value of $7,007.61 per day.

If, however, the purchase price of stable manure is taken as a basis (1.14 cents per 100 pounds delivered at the Marchfeld); the value reduces to—

	Per day.
Sewer water (Table II, column *k*)	$1,362.72
Sediment (Table II, column *f*)	226.08
Therefore, of the uncleared sewage	1,588.80

Finally, computed per head of population occupying the sewer-system district and per year, the sewage has a total value of $1.96 compared with artificial fertilizers, and of $0.44 compared with stable manure.

This difference is quite considerable. It has been previously shown that the valuation according to the high prices of similarly named plant foods in the artificial fertilizer is not permissible; therefore to render possible a correct comparison, avoiding all illusions, the lower of the foregoing figures are to be taken as the basis.

It would not be entirely unjustified in the valuation of the sewage to take into account only its nitrogenous ingredient. In this case, then, the value of the sewage, the above-named price for the kilogram of nitrogen in stable manure taken as the basis, would be placed at an average of $0.167 per 100 cubic feet of clear sewage.

Finally it should be mentioned that the foregoing average figures for the composition and value of Vienna sewage, while as close to reality as possible, can still undergo a change, because on one side the examination for volume and composition of sewage had to be confined to the trunk sewers, and on the other the investigations could be made only during a part of the year. However, not only the results obtained in similar cases elsewhere, but also the circumstance that the sewage examined formed by far the largest portion of the total, and that different kinds of weather prevailed during the gauging and sampling, make it appear that the figures obtained can not be far from the actual yearly average for all sewage.

It is hereby recommended to make continuous measurements for at least a year of the water flowing in the trunk sewers and to make, automatically, simultaneous tests to obtain the average.

III. PROFITABLE RETURN FROM VIENNA SEWAGE WHEN USED FOR AGRICULTURAL PURPOSES.

[Regierungsrath Markus.]

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A.—PROFITABLE USE OF SEWER WATER BY SEDIMENTATION.

[Regierungsrath Markus and Chief Engineer J. Kohl.]

As was seen in Appendix II, 225,726 pounds of sediment are daily discharged by the Vienna sewers; this at a price of 9.98 cents per 100 pounds, computed from comparison with the cost of stable manure, possesses a theoretical value of $226.08 per day.

If this figure is compared with the value ($1,362.72) of the daily flow of sewage, it follows that the greater portion of the agriculturally valuable material is contained in water, and that the useful value of the solid material in the sewage is that of the material in solution as 1:6.

Now, however, arises a condition which tends to considerably reduce the computed value of the sediment.

The quantities of sediment given in Table II were actually obtained in the laboratory by filtration of the sewage, also by a process concerning the application of which to a daily quantity of 3,290,000 cubic feet no report can be made. The extraction of the sediment by chemical precipitation as is done at Frankfort-on-the-Main, Wiesbaden, Essen, Dartmund, Halle, etc., has, as is known, to the present obtained few really satisfactory results in regard to general agriculture, while the deposit in the settling basins is damaged and depreciated in value by the presence of matters undesirable for agricultural purposes, such as clay, chalk, and iron oxide.

The experiments of Dr. Lepsius in Frankfort from 1888 to 1891 have proved that the clarification of sewage by purely mechanical methods is only a little behind other processes. The total yearly expense of $16,800 for chemical precipitation in Frankfort is, however, justified by the fact that the deposit, owing to the above-mentioned materials and to drying, becomes transportable.

Should the necessary settling basins for the mechanical clarification of the sewage in Vienna not demand too great extension, and thereby lead to an excessive increase of cost for plant and operating expenses, the process must be restricted merely to the diminution of velocity of flow, with the object of obtaining the heavy precipitable matters.

The volume of sediment so obtained would in any case be actually smaller than that stated in Table II, and for the most part be composed of the heavy mineral ingredients, which possess either only a very little fertilizing value or none at all. Quantity and quality of the sediment experience, therefore, a considerable reduction in this one practicable method of sedimentation. Thus, for example, in Berlin about 335,350 cubic feet of heavy matter, consisting mainly of sand, paper, rags, and coffee grounds, are annually discharged from the pumping stations and the sewers. This mass is one forty-seven-hundredth of the total volume of the sewage.

The value of the sediment, computed from analysis as 6¼ cents per capita yearly, would by sedimentation of all the sewage experience a considerable reduction.

As a measure of the cost of clarification as it is carried on by the several municipalities, it may be noted that, including an interest charge of 4 per cent per capita yearly upon the capital invested, it amounts to in—

Frankfort,	1.22 marks=0.73 florins=$0.350.
Wiesbaden,	0.68 marks=0.41 florins=$0.197.
Halle,	0.83 marks=0.50 florins=$0.240.
Essen,	1.00 marks=0.60 florins=$0.288.

From this it appears that the expenses of sedimentation are quite considerable, and that even with the most practicable simplification of plant they will always be higher than the value of the sediment obtained, and particularly so where on account of sanitary reasons the removal of the clarification plant from the neighborhood of the city is demanded. In such a case the establishment must be removed to a considerable distance and the sewage supplied to it there. Moreover, the nature of the sediment so obtained demands still further treatment in order to bring it into a condition permitting its transportation to farther distances.

These conditions relating to the cost of extraction on the one hand and the fact established by already existing settling plants on the other, that the deposit formed in the settling basins is removed by the farmers either not at all or only to a very slight extent, even when they can obtain it without cost, do not speak much in favor of sedimentation.

Numerous privies still exist in the suburban districts of Vienna, and their contents are generally buried, or emptied into the sewers, although 100 cubic feet of it contains 26.53 pounds of nitrogen, 11.4 pounds of phosphates, and 10.5 pounds of potash, and, therefore, in comparison with stable manure, possesses a value of $0.476.

The applicability and value of a fertilizer depend not only upon its theoretically computed value, but first and foremost upon its form and the relative proportions of the plant food contained in it.

In view of all these circumstances the undertaking of even partial sedimentation of the sewage can not be advised under present known conditions of operation.

B.—PROFITABLE USE OF SEWAGE BY IRRIGATION WITH IT UNDILUTED OR DILUTED IN GENERAL.

[Regierungsrath Markus.]

A utilization of sewage in that manner can in general be made on the level tracts upon the right bank as well as upon the left bank of the Danube.

1. *Upon the right bank.*—The ground upon the right bank of the Danube lies very unfavorably for the conduction of sewage.

2. *On the left bank.*—In whatever manner the utilization is made, whether by filtration with undiluted sewage or by irrigation with diluted sewage, the plans for collecting the sewage near the Stadlau Bridge and for carrying it across the Danube will be similar, while the mixing of the sewage with river water can first be done on the farther side of the stream.

The method and manner of transferring the sewage to the other bank varies, however, as this can be accomplished either by means of a pressure pipe above ground and a bridge, or by laying an inverted siphon under the bottom of the Danube. The locality in which both sewage and river water are used can also be varied according to the proportion of extension given the irrigation district.

There are therefore two cases to be discussed: (*a*) Carrying the sewage over above the Danube and conducting it into the Marchfeld irrigating canals at Gerasdorf; (*b*) conducting the sewage across under the Danube and thence into the Marchfeld irrigating canals at Gerasdorf.

* * * * * * *

The total cost per 100 cubic feet for fixed charges and operating amount therefor to seven-tenths cent, and for operating expenses only to twenty-nine one-hundredths cent, against the value of 2.45 cents per cubic meter given in Appendix II.

In Berlin the cost of the pumping alone amounts to 0.114 mark, or 7.6 cents, per 100 cubic feet of sewage with the normal pressure head to the filtration fields of 66 to 82½ feet.

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Total cost for carrying the sewage to Gerasdorf (lower level) by means of a siphon under the Danube River, $1,238,400.

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With a volume of 731,980,800 cubic feet of sewage pumped during the working season of eight months, the total cost of handling amounts to 0.777 cent and the cost of operating proper to 0.287 cent per 100 cubic feet.

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C.—IRRIGATION WITH UNDILUTED SEWAGE ON THE LEFT BANK OF THE DANUBE.

[Regierungsrath Eduard Markus.]

Pure broad irrigation presents to the agricultural point of view the picture of excessive extravagance. It gives no natural, and particularly no agriculturally useful fertilizer, with a compound of the unfavorable proportions of sewage. How high the actual surplus application of fertilizer amounts to in the case of pure broad-irrigation filtration is shown by Grandke in the following interesting figures:

An ordinary application of stable manure for farming purposes amounts to 42,300 to 52,900 pounds (24 to 30 loads) per acre; a heavy application, to 70,600 to 88,200 pounds (40 to 50 loads). An acre of broad-irrigated land receives, on the contrary, a fertilization equal to eleven times that of an ordinary application and seven times that of a heavy one, and that, moreover, every year. A farmer who gives his farm a full fertilization only every third year would be able to regularly and abundantly fertilize with nitrogen about twenty-one times as large a surface. With potash and phosphates the fertilization amounts to three or four times a heavy application each year.

It is assumed from analogy with the Berlin irrigation fields that 198,000 cubic

feet of sewage will be taken by each acre per year in irrigation, and that the Vienna irrigation fields can have an extent of 6,125 acres. (Berlin has 8,125 acres.)

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Total cost of irrigating a surface of 6,125 acres is $3,256,800, or $531.72 per acre.

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In the foregoing estimate it was, however, assumed that the surface of 6,125 acres would be subjected to irrigation throughout its whole extent. The extent of land available is likely to be very small at first, and only obtain an extension in case the success of the irrigation becomes pronounced.

In this connection the development of the irrigation fields in Gennevilliers at Paris is very instructive, although these, owing to the market facilities offered by Paris, were without doubt in a particularly favored place.

These irrigation fields measure:

	Acres.
1869	15
1880	1,125
1888	1,787½
1890	2,000

As it therefore required a period of twenty-one years in Gennevilliers to bring the area to 2,000 acres more there is no prospect that this extension will be accomplished in the Marchfeld.

In spite of this the system for collecting, pumping, and conducting the sewage must be constructed for handling the before-mentioned volume of 35.3 cubic feet per second.

The costs of the project remain to a certain degree independent of the extent of irrigation practiced. Unlimited diminution is possible only in the operating expenses.

A slow development of the irrigation farming, or if it remains below the area of 6,125 acres, would therefore impose an exceedingly heavy additional burden upon the first irrigated property. A guaranty that the irrigation farming will quickly attain its extension, or that the above-computed extent of 6,125 acres will be even only approximately reached, is not given.

These figures prove that the carrying out of a broad irrigation purely is not possible, and that there is scarcely anything to be said concerning a profitable utilization of the sewage in the sense of a definite return upon the capital outlay.

In this place it may be allowed to give some data obtained from a ten years' operation of the Berlin irrigation fields, as well as from two French systems of this nature.

As is stated in the report of the Berlin city irrigation works, the irrigation farms, during the administration year of 1891–92, had a surplus of receipts over expenses of $58,520, or an interest of 1.423 per cent upon the capital outlay. In this connection it should, however, be remarked that in the capital outlay for the irrigation farms the cost of acquiring the land for pumping stations, for their construction, and for laying the pressure pipes up to the irrigation farms is not included. In similar manner the expenses of operating the pumping stations (computed at $161,174.64 for the year 1891–92) are not set down as a charge against the irrigation farms, but is charged against the sewerage of the city. Were all these expenses charged to the sewage farms, they must have been unremunerative.

Closer information concerning the profitableness of the individual sewage farms is contained in the report of the Berlin city councillor, Marggraff, upon "The Sewerage of Berlin," published with the proceedings of the Seventh International Congress of Hygiene and Demography in London, 1891.

According to that there were up to that time four farm systems in complete operation. From these was obtained during the municipal year 1890–91, including the purchase price of the farms, their adaptation, grading, and draining, a dividend as follows, viz:

	Per cent.
1. From the farms of Osdorf	0.049
2. From the farms of Grossbeeren	2.56
3. From the farms of Falkenberg	3.29
4. From the farms of Malchow	2.32

Even in these figures also the cost of the system for bringing the sewage to the farms, as well as the cost of the maintenance and operation of this system, are not included.

According to the contents of the municipal report of the city of Berlin for the

year 1892-93, the profitableness of the sewage farms during the period had considerably diminished and amounted to—

	Per cent.
1. The Osdorf farm	−0.21
2. The Grossbeeren farm	−0.80
3. The Falkenberg farm	+2.26
4. The Malchow farm	+0.92
5. The Blankenfelde farm	−2.73

Essentially more favorable are the conditions at the sewage farms at Gennevilliers, near Paris, which in 1890 had attained the size of 2,000 acres. They are in excellent condition and produce the finest kind of products. The increased profit from the ground is computed to be $64 per acre, and its selling value is estimated at from $800 to $1,600, and may run up to even $1,760 per acre.

The city of Paris bought the land at the beginning and afterwards sold it at a considerable profit.

The population of Gennevilliers increased 80 per cent between 1866 and 1886, and between the latter date and 1891 grew from 4,443 to 5,837. The conditions as to health have not suffered in the least, notwithstanding the ground water used for drinking purposes is the sewage which has been filtered through the soil. During the cholera epidemic in the summer of 1892 the irrigation was as little interrupted there as in Berlin, where the conditions on account of the slight permeability and receptiveness of the soil are not by any means so favorable.

At Rheims in 1890 the sewage farming was conducted by the Compagnie des Eaux Vannes. The surface available for irrigation amounts to 1,300 acres, of which the city of Rheims laid out 400 acres, while the remainder was purchased by the company.

A portion of this area receives the sewage by gravity, the remainder (Domaine Baslieux) by the pumping of a 110-horsepower engine. In 1891, 600 acres were cultivated with sugar beets under complete irrigation.

After the conclusion of the agricultural experiment the company leased all the irrigated land to a farming company at the following average yearly prices per acre, viz, $8 and $16 for the first two years, $16 for the following eight years, $18 for the following ten years, and $20 for the following sixteen years.

The instance just quoted proves that the success of sewage farming can be very different, depending upon the local conditions.

Climatically Paris and Rheims are considerable more favorably situated than Vienna and Berlin, a point that should not be lost sight of. Moreover, it is not proved that the system of limited area at Gennevilliers would be able to return such large profits if it were given an extension of area to 5,000 to 7,500 acres.

Finally, it must not remain unnoticed that throughout France, where, in consequence of a rational irrigation (not filtration with city sewage), a favorable climate, special industry of inhabitants, an assured market, and a rational culture, the cultivation of certain kinds of plants, or the development of a special culture method have become particularly profitable, the price of the land as a result of its increased earning capacity has experienced a very considerable rise in value.

As illustration, the ground in the vicinity of Marseilles, irrigated with the water from the sewers, costs $1,200 to $1,600 per acre; that adjoining the canals of Carpentras, Isle and Cebedan, also in the parishes of Chateaurenard, St. Remy, and Graveson, an average of $320 to $400 per acre (formerly $56), while the areas watered by the Canal du Verdon have risen in price to five and ten times their earlier value.

Exactly similar conditions have been shown also in the irrigated portions of Lombardy and Venice.

Moreover, were the lease profits obtained at Rheims, running from $8 to $20 per acre, capitalized at an interest of 4 per cent, there results a ground value of from $200 to $500 per acre, which is not much higher than that quoted above for well watered and thickly cultivated lands in the departments of Bouches du Rhone and Vauclose, although remaining far behind the value of Gennevilliers.

Against the above-quoted prices for land there is in case of the introduction of sewage farming into the Marchfeld a charge per acre in round numbers of $537.60 if the full area of 6,125 acres is utilized, and of $864 in round numbers if the irrigation is limited to 2,500 acres.

In view of all the foregoing circumstances the construction of an irrigation system with undiluted sewage can not, under the given conditions, be recommended.

D.—IRRIGATION WITH DILUTED SEWAGE ON THE LEFT BANK OF THE DANUBE.

[Regierungsrath Markus.]

It is very difficult at best to properly establish a rational utilization of diluted sewage.

By a good average harvest there is, according to Heiden, taken from the ground the nitrogen of 10 persons, the phosphates of 20, and the potash of 50. With the

sewage from Vienna and an uninterrupted irrigation an area of 328,750 acres can therefore be abundantly supplied with nitrogenous fertilizer, if no account is taken of the unavoidable loss by decomposition of the sewage in the conduits leading to the place of use. To be sure, the necessary amounts of phosphates and potash lacking must be supplied in some other way.

Fertilization with diluted sewage is subject to the same limitations as a simple irrigation, and therefore, to begin with, is dependent upon duration of the profitable period of vegetation and the precipitation. The duration of this irrigation can be set down as from six to eight months each year upon the average. The Vienna sewage would, therefore, during this length of time be able to cover 162,500 to 215,000 acres upon a nitrogen basis.

E.—CONCERNING THE PROFIT TO BE DERIVED FROM INTRODUCING THE VIENNA SEWAGE INTO THE TRUNK CANAL OF THE PROPOSED MARCHFELD IRRIGATION.

[Freiherr von Pirquet, Wilh. Wodicka.]

If it is worth while to discuss the profitableness of this future introduction, it appears to be of the first importance to consider the question squarely, whether, as some of the members of the subcommittee have feared, a large part of the fertilizing material contained in the sewage would not be lost during its long passage through the sewers and canals. The authors do not share these fears, and found their opinions upon the teachings of scientific results and practical experiences.

The principal action is accomplished in the same manner as the so-called "self-purification of rivers;" this is, that not only are the harmful organic substances in the water of a river diluted or deposited, but also undergo a particular chemical decomposition, so that after a relatively short flow they lose their harmful character. This process of change does not, however, depreciate the fertilizer, but the contrary.

By this only a change of harmful organic substances to harmless organic materials has been accomplished; the value and quality of the fertilizing materials are not injured by this change.

A portion of the plant food which is contained in the sewage is lost after a long flow in the rivers, either by being carried into the underground or by being taken up by vegetable and animal life. This loss is, however, in our case exceptionally small.

* * * * * * *

As a standard practical example of an irrigation with strongly diluted city sewage, which still even to great distances fertilizes the soil in a conspicuous manner, the Vettabia Canal in Milan can be mentioned. Regierungsrath Markus gives some detailed data concerning it in his instructive book. Improvements in Italy, pages 85–87; it dates from the twelfth century, carries as high as 106 cubic feet of river water per second, including about 1.44 cubic feet of the so-called Milan house water. The effect upon the vegetation is a conspicuously favorable one, and no harmful effect in sanitary matters has arisen from the system to this day.

These statements have found full confirmation and amplification in the information which Vittorio Salvini has given. We give here his letter of April 6, 1894, to Freiherr v. Pirquet nearly at full length, on account of its importance:

"This canal carries 106 to 141 cubic feet of water, and is the one which receives a large part (about three-fourths) of the Milan sewage and carries it for distribution below Milan to a distance of 12 miles.

"From the experiences which we, who are at the same time engineers and farmers, have had, we can state that the loss of fertilizing constituents even at a distance of 12 miles is an entirely insignificant one. It would be an error to believe that the farmers who live 12 miles down the stream receive for irrigation only clear water from the Vettabia. The water in the canal may not indeed be as rich in fertilizing materials as directly in front of the doors of the city, but it is still far richer than the water from any other canal. In order to prove to you what I state, I am in position to state that for tracts of ground which are irrigated with water from the Vettabia Canal the lease price is about $4 per acre higher, as well for tracts 12 miles distant as for that on the immediate outskirts, than for land otherwise irrigated.

"For the purpose of keeping the manuring contents in the current of the stream undiminished, it is necessary to give the canal the strongest possible fall. Our Vettabia has a fall of 0.70 per cent up. Only relatively small amounts of fertilizing material and sediment are at first wasted in the bed in a newly built canal; after a few months the bottom and sides are covered with a layer of manuring material which forms an actual crust and which in consequence prevents any

further escape. We, at this locality, in order to prevent the accumulation of heavy matters, and at the same time to keep the canal water throughout its course at the same fertilizing strength as far as possible, place laborers in the canal from time to time who stir up the coating of slime on the bottom, so that it is carried along by the water.

"If the Vettabia water, as I have mentioned, brings an equally high price 12 miles below Milan, the cause lies probably in this fact, that commercial fertilizers can not be so easily obtained for ground at a distance from Milan, and the fertilizing water becomes that much more valuable. But the equality of price after a long experience proves that the contents of the water suffer no considerable loss during the long flow."

CONSTRUCTION OF THE MARCHFELD IRRIGATION PROJECT FOR AN AREA OF 172,500 ACRES.

The cost of the transfer system, increased by the capitalized operating expenses (estimated for eight months), according to the computation previously given, amounts to $12.096 per acre.

Against this outlay of capital there should be computed the value of the sewage, which, having been sufficiently diluted with water, is brought to the plain in a condition favorable for taking by the plants.

One must therefore—

First, take into account a loss of value in consequence of the dilution of the sewage by rain and by the flushing of the intercepting sewers. Probably each intercepting sewer may be flushed for a maximum of three hours daily. As by this the sewage is only diluted and not rendered entirely valueless, we will charge the remnant to rain and contingencies, and so take three hours—i. e., one-eighth, or 12.5 per cent—into the computation as loss in value.

Second, take account of those, even if small, losses reducing the manuring material which occur during the flow through the canal or arise from the fact that in irrigating the ground the fertilizing matter is not entirely absorbed, but a portion passes into the subsoil and so is lost to vegetation.

In an irrigation the suspended matters are almost entirely retained by the ground; the taking up of the separated matter depends, however, upon the absorptive powers of the ground and upon the strength of the irrigation. In this connection it must be mentioned that the public report of the expert commission already mentioned says the southern Marchfeld district, which forms two-thirds of the entire plain, consists of a sandy loam, a tenacious soil, whose absorptive power is doubtless very high, and that the proposed irrigation is actually only a moistening one, a surplus of water not being at command.

Now, it is known that during the summer in a tenacious soil only 5 to 6 per cent of the rainfall penetrates to the lower depths; in a light soil as high as 23 per cent, while the remainder is evaporated and taken up by plants.

We compute, therefore, these losses of the second category as 15 per cent.

If we add the above-estimated loss of 12.5 per cent to this, the total loss figures out 27.5 per cent, or, in round numbers, 30 per cent; with this acceptation a sufficiently cautious estimate can be made.

Upon the basis of the computations made in Reports I and II—with a flow of 35.3 cubic feet per second and with a valuation of 2.55 to 11.12 cents per 100 cubic feet—the value of the sewage flowing from the trunk sewers and for 240 days amounts to, in round numbers, $336,000 to $1,536,000.

If we take account of the above-computed 30 per cent reduction, we have the value of the fertilizer available for vegetation reaching the Marchfeld in the course of the year in round numbers from $235,200 to $1,008,000.

This amount divided among 17,250 acres gives a yearly manuring value of from $1.37 to $6.17 per acre, which therefore represents the basis for the calculation of the profit upon the capital outlay for the conducting system.

The capital outlay of $12.10 per acre for the conducting system would therefore pay an interest of $1.37 to $6.17—that is, of from 11 to 50 per cent.

* * * * * * *

IV. CONCERNING THE PROFITABLE USE OF SEWAGE UNDER THE HOBOHM PLAN OF LEADING THE SEWAGE AND CARRYING IT (AFTER A PRELIMINARY PARTIAL SEDIMENTATION) IN BOATS UPON A CANAL CROSSING THE MARCHFELD IN THE DIRECTION OF GROSS-ENZERSDORF-AUGERN.

* * * * * * *

The Hobohm scheme does not seem practical, and would by its adoption not be able to bring about a profitable utilization of the Vienna sewage.

TABLE I.—*Table giving volume of sewage in the main intercepting sewers along the Danube Canal.*

Number.	District.	Main intercepting sewers. At present. Area (acres.)	Inhabitants in thousands.	Inhabitants per acre.	Volume of sewage. Cu. ft. per second.	Cu. ft. per day.	Cu. ft. per capita per day.	In future. Inhabitants in thousands.	Volume of sewage. Cu. ft. per second.	Cu. ft. per day.	Total I and II. Cu. ft. per second.	Cu. ft. per day.	Basis for future project. Inhabitants in thousands.	Cu. ft. per second.
	Right intercepting sewer.													
1	Schreiber-Bach	49.4	5.30	105	0.11	9,147	1.76	.....	.....	.....	0.11	9,147	29	1.24
2	Nessel-Bach	54.4	5.60	103	.14	12,221	2.18	.....	.....	.....	.14	12,221	52	2.54
3	Krotten- u. Erbsen-Bach	93.9	7.90	84	.21	18,296	2.32	0.8	0.04	3,088	.25	21,333	154	7.38
4	Wolfsgraben and Spittelauergasse	264.4	22.15	84	.71	61,033	2.76	.....	.....	.....	.71	61,033	90	4.98
5	Als-Bach with Wahringer-Bach	1,257.8	202.60	161	**3.14**	271,611	1.34	3.7	.14	12,221	3.28	283,832	417	18.81
6	Pramer- to Maria Theresiagasse	175.4	31.70	181	1.06	91,549	2.87	.....	.....	.....	1.06	91,549	38	1.66
7	Ringstrasse	281.7	36.19	128	**1.87**	161,730	4.47	.....	.....	.....	1.87	161,730	59	2.65
8	Salzgries, Rothenthurm-Strasse, Postgasse	291.6	41.30	142	1.41	122,066	2.96	.....	.....	.....	1.41	122,066	61	2.77
9	Left Choleracanal with Ottakringer-Bach	2,073.3	388.50	187	**8.19**	707,989	1.82	6.2	.21	18,296	8.40	726,285	900	40.49
10	Right Choleracanal	1,890.4	256.16	136	**10.41**	900,236	3.51	14.1	.49	42,737	10.90	942,973	939	42.61
11	Weissgärberländ-Schlachthausgasse	627.7	76.00	121	2.19	189,209	2.49	.....	.....	.....	2.19	189,209	176	7.38
12	Favoritener intercepting sewer	400.3	61.00	152	**2.15**	186,137	3.05	.....	.....	.....	2.15	186,136	261	11.86
13	Erdberger Mais-Simmering	197.7	25.80	130	.64	54,923	2.13	.....	.....	.....	.64	54,923	148	1.85
	Total right intercepting sewer	7,657.9	1,160.10	152	32.23	2,786,147	2.48	24.8	.88	76,291	33.11	2,862,438	3,324	151.17
	Left intercepting sewer.													
14	Brigittenauer intercepting sewer	195.2	29.60	152	**1.66**	143,435	4.85	.....	.....	.....	1.66	143,435	160	7.20
15	Von der Rembrandt-Strasse to Stadlauerbrücke	672.1	1,253.00	186	4.48	387,566	3.09	.....	.....	.....	4.48	387,566	228	10.34
	Total left intercepting sewer	867.3	154.90	179	6.14	531,001	3.43	.....	.....	.....	6.14	531,001	388	17.54
	Total left and right intercepting sewers	8,525.3	1,315.00	154	38.37	3,317,148	2.52	24.8	.88	96,291	39.25	3,393,439	3,712	168.71

NOTES.—The figures in heavy type indicate volumes of sewage measured by a weir and from which samples were taken for analysis. The gauging was done September 4-16, 1893. The volumes from the other sewers were estimated. Much ground water was carried during the gauging.

The consumption of public water during this time was 2,592,488 cubic feet per day or 29.98 cubic feet per second.

Rainfall before and during gauging.

	Inches.		Inches.
August 24	0.091	September 3	0.320
August 25	.004	September 8	.008
August 26	.024	September 9	.067
September 2	.059		

Stage of water in the Danube Canal.

	Feet.		Feet.
From August 6 to 12, average	+1.297	On September 6	−0.164
From August 13 to 19, average	− .459	On September 8	− .918
From August 20 to 26, average	−1.148	On September 10	−1.804
From August 27 to September 2, average	−2.624	On September 11	−1.148
On September 3	−2.624	On September 12	− .820
On September 5	− .492	On September 16	−1.968

TABLE II.—*Table showing amount and value of sewage in the main intercepting sewers from chemical tests by Dr. E. Meissl.*

Number in Table I.	District.	Sediment.								
		a	b	c	d		e		f	
		Pounds per day.	Pounds per 1,000 cubic feet of sewage.	Pounds per 1,000 inhabitants per day.	Value per 1,000 pounds.		Value per 1,000 inhabitants per day.		Total value per day.	
					In comparison with artificial fertilizer.	In comparison with stable manure.	In comparison with artificial fertilizer.	In comparison with stable manure.	In comparison with artificial fertilizer.	In comparison with stable manure.
5	Als-Bach and Währinger-Bach	25,953	95.53	127.9	$0.411	$0.094	$0.528	$0.120	$106.56	$24.48
7	Intercepting sewer on the Ringstrasse	3,837	23.73	105.8	.459	.104	.490	.106	17.76	3.84
9	Left Choleracanal with Ottaringer-Bach	59,667	84.29	154.4	.431	.098	.662	.149	257.28	58.56
10	Right Choleracanal	65,201	72.43	253.6	.348	.078	.888	.197	227.04	50.88
12	Favoritener intercepting sewer	4,410	23.73	72.8	.448	.102	.322	.072	19.68	4.32
14	Brigittenauer intercepting sewer	2,867	19.98	97.0	.559	.126	.533	.130	15.84	3.84
1, 2, 3, 4, 6, 8, 11, 13, 15	Total from other sewers in in Table I	63,791	67.43	187.4	.553	.126	1.037	.235	353.28	80.16
1-15	The average of all Vienna sewers	225,726	68.06	172.0	.442	.100	.758	.173	997.44	226.08

Number in Table I.	District.	Liquid.						
		g	h		i		k	
		Cubic feet per 1,000 inhabitants per day.	Value per 1,000 cubic feet = 62,604.25 pounds.		Value per 1,000 inhabitants per day.		Total value per day.	
			In comparison with artificial fertilizer.	In comparison with stable manure.	In comparison with artificial fertilizer.	In comparison with stable manure.	In comparison with artificial fertilizer.	In comparison with stable manure.
5	Als-Bach and Währinger-Bach	13.56	$1.746	$0.408	$4.502	$0.937	$911.73	$210.40
7	Interceping sewer on the Ringstrasse	44.68	.877	.198	7.536	1.699	272.54	61.54
9	Left Choleracanal with Ottakringer-Bach	18.23	.990	.226	3.466	.792	1,347.02	207.89
10	Right Choleracanal	35.14	.827	.184	5.587	.243	1,431.41	318.09
12	Favoritener intercepting sewer	24.52	.785	.178	4.531	.994	280.79	63.24
14	Brigittenauer intercepting sewer	48.46	.474	.106	4.401	.994	140.61	29.24
1, 2, 3, 4, 6, 8, 11, 13, 15	Total from other sewers in Table I	27.76	.926	.212	4.930	1.128	1,680.14	384.32
1-16	The average of all Vienna sewers	25.22	.9495	.2156	4.603	1.046	6,054.24	1,362.72

Ia.—Table giving volume of sewage in the main intercepting sewers along the Danube Canal.

Number.	District.	Main intercepting sewers. At present. Area.	Inhabitants, in thousands.	Inhabitants per hectare.	Volume of sewage. Liters per second.	Cubic meters per day.	Liters per capita per day.	In future. Inhabitants, in thousands.	Volume of sewage. Liters per second.	Cubic meters per day	Total I and II. Volume. Liters per second.	Cubic meters per day.	Basis for future project. Inhabitants, in thousands.	Volume, liters per second.
	Right intercepting sewer.	*Hectares.*												
1	Schreiber-Bach	20	5.2	260	3	259	50				3	259	29	35
2	Nessel-Bach	22	5.6	255	4	346	62				4	346	52	73
3	Krotten- u. Erbsen-Bach	38	7.9	208	6	518	65	0.81	1	86	7	604	154	209
4	Wolfsgraben and Spittelauergasse	107	22.15	207	20	1,728	78				20	1,728	90	141
5	Als Bach with Währinger-Bach	509	202.60	398	89	7,690	38	3.72	4	346	93	8,036	417	533
6	Pramer to Maria Theresiagasse	71	31.70	446	30	2,592	82				30	2,592	38	47
7	Ringstrasse	114	36.19	317	53	4,579	126				53	4,579	59	75
8	Salzgries, Rothenthurm-Strasse, Postgasse	118	41.30	350	40	3,456	83				40	3,456	61	77
9	Left Choleracanal with Ottakringer Bach	839	388.50	463	232	20,045	52	6.23	6	518	238	20,563	900	1,147
10	Right Choleracanal	765	256.16	335	295	25,488	99	14.14	14	1,210	309	26,698	939	1,207
11	Weissgärberlände-Schlachthausgasse	254	76.00	299	62	5,357	70				62	5,357	176	209
12	Favoritener intercepting sewer	162	61.00	376	61	5,270	86				61	5,270	261	336
13	Erdberger Mais-Simmering	80	25.80	322	18	1,555	60				18	1,555	148	194
	Total right intercepting sewer	3,099	1,160.10	374	913	78,883	68	24.8	25	2,160	938	81,043	3,324	4,282
	Left intercepting sewer.													
14	Brigittenauer intercepting sewer	79	29.60	375	47	4,061	137				47	4,061	160	204
15	Von der Rembrandt-Strasse to Stadlauerbrücke	272	125.30	461	127	10,973	87				127	10,973	228	293
	Total left intercepting sewer	351	154.90	441	174	15,034	97				174	15,034	388	497
	Total right and left intercepting sewers	3,450	1,315.00	381	1,087	93,917	71	24.8	25	2,160	1,112	96,077	3,712	4,779

NOTE.—The figures in heavy type indicate volumes of sewage measured by a weir and from which samples were taken for analysis. The gauging was done September 4–16, 1893. The volumes from the other sewers were estimated. Much ground water was carried during the gauging. The consumption of public water during this time was 73,400 cubic meters per day, or 848 liters per second.

Rainfall before and during gauging.

	Millimeters.		Millimeters.
August 24	2.3	September 3	8.1
August 25	0.1	September 8	0.2
August 26	0.6	September 9	1.7
September 2	1.5		

Stage of water in the Danube.

From August 6 to 12 (average)	+0.39	From September 6	−0.05
From August 13 to 19 (average)	−0.14	From September 8	−0.28
From August 20 to 26 (average)	−0.35	From September 10	−0.55
From August 27 to September 2 (average)	−0.80	From September 11	−0.35
From September 3	−0.80	From September 12	−0.25
From September 5	−0.15	From September 16	−0.60

IIa.—Table showing amount and value of sewage in the main intercepting sewers from chemical tests by Dr. E. Meissl.

Number in table No. I.	District.	Sediment.								
		a	b	c	d		e		f	
		Meter-centner per day.	Kilograms per 1,000 liters of sewage.	Kilograms per 1,000 inhabitants per day.	Value per 100 kilograms.		Value per 1,000 inhabitants per day.		Total value per day.	
					In comparison with artificial fertilizer.	In comparison with stable manure.	In comparison with artificial fertilizer.	In comparison with stable manure.	In comparison with artificial fertilizer.	In comparison with stable manure.
					gulden.	*gulden.*	*gulden.*	*gulden.*	*gulden.*	*gulden.*
5	Als-Bach and Währinger-Bach	117.7	1.53	58	1.89	0.43	1.10	0.25	222	51
7	Intercepting sewer on the Ringstrasse	17.4	0.38	48	2.11	0.48	1.02	0.22	37	8
9	Left Choleracanal with Ottakringer-Bach	270.6	1.35	70	1.98	0.45	1.38	0.31	536	122
10	Right Choleracanal	295.7	1.16	115	1.60	0.36	1.85	0.41	473	106
12	Favoritener intercepting sewer	20.0	0.38	33	2.06	0.47	0.67	0.15	41	9
14	Brigittenauer intercepting sewer	13.0	0.32	44	2.57	0.58	1.11	0.27	33	8
1, 2, 3, 4, 6, 8, 11, 13, 15	Total from other sewers in Table I	289.3	1.08	85	2.54	0.58	2.16	0.49	736	167
1-15	The average of all Vienna sewers	1,023.7	1.09	78	2.03	0.46	1.58	0.36	2,078	471

Number in table No. I.	District.	Liquid.						
		g	h		i		k	
		Cubic meters per 1,000 inhabitants per day.	Value per 1,000 liters=1,003 kilograms.		Value per 1,000 inhabitants per day.		Total value per day.	
			In comparison with artificial fertilizer.	In comparison with stable manure.	In comparison with artificial fertilizer.	In comparison with stable manure.	In comparison with artificial fertilizer.	In comparison with stable manure.
			kreuzer	*kreuzer*	*gulden.*	*gulden.*	*gulden.*	*gulden.*
5	Als-Bach and Währinger-Bach	38.4	24.7	5.7	9.38	2.16	1,899.43	438.33
7	Intercepting sewer on the Ringstrasse	126.5	12.4	2.8	15.70	3.54	567.80	128.21
9	Left Choleracanal with Ottakringer-Bach	51.6	14.0	3.2	7.22	1.65	2,806.30	641.44
10	Right Choleracanal	99.5	11.7	2.6	11.64	2.59	2,982.10	662.69
12	Favoritener intercepting sewer	86.4	11.1	2.5	9.44	2.07	584.97	131.75
14	Brigittenauer intercepting sewer	137.2	6.7	1.5	9.19	2.07	272.10	60.92
1, 2, 3, 4, 6, 8, 11, 13, 15	Total from other sewers in Table I	78.6	13.1	3.0	10.27	2.35	3,500.30	800.66
1-15	The average of all Vienna sewers	71.4	13.43	3.05	9.59	2.18	12,613.00	2,864.00

[NOTE.—In Tables I and II English units of measurement are used. Tables Ia and IIa are the same, using the metric system.]

SOME OBSERVATIONS ON THE EFFECT OF FLUSHING DEVICES FOR SMALL SEWERS.

[By Asa E. Phillips, Assistant Engineer, District of Columbia.]

The general principle of the flushing device is to suddenly discharge into the sewer a considerable volume of water for the purpose of cleansing the pipe of stranded solids. As a rule, the siphon is 6 or 8 inches in diameter, and is usually somewhat smaller than the sewer to which it is connected. The quantity of water is measured by the horizontal section of the tank, since the depth of discharge is ordinarily constant for one size of siphon. The amount of discharge per second varies somewhat for the different varieties of the device and different local conditions, but is roughly stated as 1 cubic foot per second for the 6-inch siphon and 2 cubic feet per second for the 8-inch. No formula has been proposed for the volume of water required for different grades and sizes, and the only rule known to have been used appears to be of little value. This important detail is determined by individual judgment, generally unsupported by investigation or experience, so that the common practice has varied within a large range of values, while tanks of uniform size usually have been constructed regardless of differences in the size or gradient of the sewers to be flushed. The uncertainty as to the precise effect of the flush and the complex conditions as to contributing population, rate of water consumption, etc., have been justly considered a bar to any precision in this respect. Recent discussion of the subject, however, has tended to establish certain limitations in the use of flushing devices which should lead to improvement in the general practice.

The work to be accomplished by the flush is the removal at regular and frequent intervals of solid matter flushed into the sewer from house laterals, and there stranded because of the shallow depth of flow and sluggish current and its carriage down the line to a point where the depth and velocity are sufficient to insure removal to the ultimate point of discharge. The efficiency of the flushing device in performing this work is not well understood. But little is known of the effect under the varying conditions encountered, especially for widely different grades, and at considerable distance from the dead end. It is generally considered, however, that the effect diminishes very rapidly as the distance increases, and becomes almost imperceptible 600 or 700 feet from the tank, but, so far as can be ascertained, this has been observed only in cases of flush of small volume on flat grades, or where the depth of ordinary flow was considerable. Of the effect of discharge of 600 gallons or more, such as were used in the cases to follow, there appears to be no recorded observations, so that no comparison with those already published can be made. Several grade conditions have been selected for the purpose of illustrating the effect of the flush under such circumstances, and an attempt made to indicate by means of diagrams the different results obtained. For

these no special accuracy is claimed, but in the few cases given the differences are sufficiently marked as to suggest certain conclusions therefrom.

The Park street line is the first of these. This sewer is 12 inches in diameter, about 1,870 feet in length, and has a uniform grade throughout of 9 inches per 100 feet. Preliminary examination discovered slightly unfavorable conditions for experimental work, such as an uneven grade, rough joints, and poor alignment in places, all of which affected the observations and results to some extent. It may now be stated that, with the exception of the Chapin street line, the sewers cited are old and generally possess these irregularities, but, excepting slight silt accumulation at points distant from the basin, they were found to be very clean. The presence of even a small amount of silt in the invert, particularly at manholes, undoubtedly affected the flow and was the chief source of error in the observations.

The tank on Park street was found to have an effective capacity of 84 cubic feet, or about 630 gallons, and discharged through an 8-inch siphon in the mean time of forty-two seconds. No attempt was made to determine the velocity at the point of discharge, but this date would indicate an approximate mean velocity of 6 feet per second. Observations of the flush were simultaneously taken at all of the manholes, and the depths of flow were recorded at intervals of fifteen seconds or less. These depths were referred to the time of siphon discharge, and the diagrams of the flush have been constructed from this datum.

The first diagram (fig. 1) shows the form of the flush wave as taken at five consecutive manholes within 1,000 feet of the tank. The lower four manholes were not platted because of the confusion of lines that would result, but the data are given in Table I. This diagram and tabulation show how well the depth of flow is maintained for very long distances. One thousand feet from the dead end the flush is very efficient, and at a distance of nearly 2,000 feet appears to be quite effective. This large radius of effect is doubtless due to the volume of water used, as published data for smaller discharges indicate that a tank of half this capacity would have a very greatly diminished influence.

TABLE I.—*Park street sewer.*

[Capacity of tank, 84 cubic feet=630 gallons; time of discharge, 42 seconds.]

Manhole.	Size (diameter).	Gradient	Distance from dead end.	Depth of flow.		Duration of greatest effect.	
				Normal.	Flush.		
	Inches.	*Per cent.*	*Feet.*	*Inches.*	*Inches.*	*Min.*	*Sec.*
1	12	0.75	200	¼	7¼	1	00
2	12	.75	382	¼	7¼	1	15
3	12	.75	572	1	6¼	1	45
4	12	.75	738	1½	5¾	2	00
5	12	.75	948	1¼	5	2	15
6	12	.75	1,132	----	----	----	----
7	12	.75	1,332	1¾	4¼	2	50
8	12	.75	1,486	1½	4	3	00
9	12	.75	1,688	1¾	3¼	3	45
10	12	.75	1,869	1¾	3¼	3	45

The second diagram for this line (fig. 2) shows the computed velocity curve for the ordinary flow, the assumed velocity to prevent sedimentation and the accelerated velocity due to the flush. These curves are not supposed to be precise, but they illustrate the purpose of the flushing device, and to some extent the degrees of effectiveness required.

The curve of normal flow shows the very low velocity along the upper portion of the line, and its gradual increase approaching the required velocity at the lower end, while the flush curve shows a corresponding high velocity at the upper end and its rate of fall toward the 2½-foot-per-second velocity, where in theory at least it would seem that the two curves meet at a common tangent point. In this sewer, it may be noted, the normal flow does not attain a rate of 2½ feet per second, and probably would not for a distance of 2,000 feet. It is also to be observed, however, that the flush would seem to maintain this velocity for a distance probably as great; so that, so far as these observations go, they indicate that for this very long line and flat grade the flush tank is efficient and of the proper size.

The second series, taken on one of the Connecticut avenue sewers, is chiefly interesting as showing the effect produced on a varying and decreasing gradient.

TABLE II.—*Connecticut avenue sewer.*

[Capacity of tank, 82 cubic feet = 615 gallons; time of discharge, 45 seconds.]

Manhole.	Size (diameter).	Grade.	Distance from dead end.	Depth of flow.		Duration of greatest effect.
				Normal.	Flush.	
	Inches.	*Per cent.*	*Feet.*	*Inches.*	*Inches.*	*Min. sec.*
1	12	1	175	¼	5¼	1 15
2	12	1	325	1½	5½	1 30
3	12	0.4	473	1¼	5¼	3 00
4	12	1	613	1	3¼	3 00

The diagram (fig. 3) illustrates the diminished velocity and enlarged area of section of the flush wave, as recorded at manhole No. 3, showing the marked effect of the diminished rate of grade in the portion of the sewer immediately above. Unfortunately this could not be further observed, owing to a change in gradient from this point. It probably indicates, however, that for a line of varying slope the minimum should be considered in fixing the capacity of the tank.

The third series was taken on the Chapin street sewer, which has the reversed conditions of a varying but rapidly increasing gradient. The observed effect of the flush is very clearly shown by the diagram (fig. 4). The rapid run-off and greatly reduced area of section toward the lower end of the sewer indicate the very high velocity which such steep slopes must produce. In this case the minimum grade being 1 per cent, and that for a length of only 190 feet, a flush tank of considerably less capacity would probably be sufficiently effective, if, indeed, for such grade conditions automatic flushing is at all necessary.

TABLE III.—*Chapin street sewer.*

[Capacity of tank, 83 cubic feet=620 gallons; time of discharge, 48 seconds.]

Manhole.	Size (diameter).	Grade.	Distance from dead end.	Depth of flow.		Duration of greatest effect.
				Normal.	Flush.	
	Inches.	*Per cent.*	*Feet.*	*Inches.*	*Inches.*	*Min. sec.*
1	12	1	190	¼	6¼	1 00
2	12	2	350	¼	4¼	1 00
3	12	5.6	490	¼	3¼	1 00
4	12	9	705	¼	3	1 00

The fourth series, taken on one of the Thirty-second street sewers, shows the observed effects on a nearly uniform steep grade. The first diagram (fig. 5) for this line shows the form of the flush wave as observed at each manhole. The quick run-off and nearly uniform area of section maintained indicate the piston-like effect of the discharge. In fact, the flow was so rapid and so quickly past as to render the taking of the observations rather difficult and their relative accuracy to some degree uncertain.

TABLE IV.—*Thirty-second street sewer.*

[Capacity of tank, 84 cubic feet=630 gallons; time of discharge, 48 seconds.]

Manhole.	Size (diameter).	Grade.	Distance from dead end.	Depth of flow.		Duration of greatest effect.
				Normal.	Flush.	
	Inches.	*Per cent.*	*Feet.*	*Inches.*	*Inches.*	*Min. sec.*
1	12	4	75	¼	4¼	1 00
2	12	4	265	¼	5	1 00
3	12	4.1	485	¼	5¼	1 00
4	12	5.0	725	1	5	1 00

The curves here and there seem to suggest such unavoidable irregularities, but the general effect is very clearly shown. The second diagram (fig. 6) indicates the approximate velocity attained by the flush in connection with the assumed 2½ feet per second constant, as well as the estimated velocity of ordinary flow. This shows in another form the marked effect of the discharge on a steep slope, and also how quickly on such grades the normal flow attains sufficient velocity to prevent deposit. From a study of these diagrams we may conclude that the flush increases rapidly in effectiveness as the grade increases, having a remarkable scouring power on grades of 4 per cent or more, but at the same time the necessity for automatic flushing decreases correspondingly, there being apparently little need for such a device on slopes approaching 4 per cent.

As has been stated, no formula has yet been proposed for the quantity of water required to flush for the several conditions as to size, gradient, etc. In a general way it has been said that "long lines on flat grades require greater capacity of tanks than steep slopes or short lines," but no attempt to formulate these factors for discussion has been made. Aside from the cost of construction and maintenance, economy in the use of water would give to the subject some importance, for one 400-gallon tank requires for a thirty-six-hour discharge no less than 100,000 gallons per annum. However the uncertain and variable conditions controlling the amount of ordinary flow, etc., would make such a formula of little practical usefulness, it would seem of some value in considering the factors in the problem, which are comparatively well understood, at least so as to show to some degree the limitations governing the use of this device for the conditions which are easily determined. Briefly, the object of the flush is to secure a periodic velocity of more than 2½ feet per second in the upper portion of the sewer and to maintain the same to a point where the ordinary flow attains this rate. Disregarding the amount of normal flow, it is evident that the quantity of water to satisfy this condition is a function of the diameter of the sewer and of its gradient. From general consideration of the well-known formula for velocity

$$V=C\sqrt{RS},$$

remembering that for circular conduits the hydraulic radius is a direct function of a semidiameter, we may consider (1) the quantity Q varies directly as the square root of the radius and inversely as the square root of the slope; and, to complete the statement of controlling conditions (2), that it varies directly as the length of sewer from the dead end to the point where the normal flow becomes sufficient to maintain a velocity of 2½ feet per second. Under these assumed conditions, designating this distance by L, in linear feet, letting C represent the necessary modifying coefficient, Q the quantity in cubic feet, and R the radius of the sewer in feet, the formula would take the shape

$$Q=\frac{L\sqrt{R}}{C\sqrt{S}}$$

Solving this equation from the data given on the Park street line we obtain a rough approximation for C of 190.

Let us now consider the factors which establish the value of L. If we let A represent the area of cross section of normal flow for any given gradient required to produce the velocity of 2½ feet per second, and let D equal the increment in discharge for each linear foot of sewer in cubic feet per second, then

$$L=\frac{2\frac{1}{2}A}{D}$$

in which A is definitely determined by an application of Kutter's formula. The quantity D is evidently a function of the number of persons or premises tributary to the sewer and of their per diem water consumption. But these are variable quantities, rarely the same for two sewers. A uniform contributing population of 30 persons per 100 feet of sewer, with a daily flow per capita of 100 gallons, three-fourths assumed to run off in six hours, would give a value for D of 0.00015 cubic feet per second.

Table V gives the value of A for different grades and the corresponding depth of flow, in inches:

TABLE V.

Grade.	Areas of section for 2½ feet per second velocity.				Depth of flow for 2½ feet per second velocity.			
	6 inches diameter.	8 inches diameter.	10 inches diameter.	12 inches diameter.	6 inches diameter.	8 inches diameter.	10 inches diameter.	12 inches diameter.
Per cent.	*Sq. feet.*	*Sq. feet.*	*Sq. feet.*	*Sq. feet.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
½	----------	0.229	0.226	0.235	----------	5.0	4.3	4.1
¼	0.135	.132	.140	.149	3.9	3.3	3.0	2.9
1	.096	.098	.108	.116	2.9	2.6	2.5	2.4
2	.046	.050	.055	.060	1.7	1.6	1.6	1.5
3	.031	.034	.038	.041	1.3	1.2	1.2	1.2
4	.023	.026	.029	.031	1.0	1.0	1.0	1.0
5	.019	.022	.024	.026	0.9	0.9	0.9	0.9

This table indicates the very small flow on the larger grades necessary to maintain a self-cleansing velocity and the relation between the ordinary discharge and the rate of grade within the limits given.

Table VI gives the various quantities of water obtained by the formula for the foregoing grades and sizes, under the conditions which have been stat^d, allowing an increased rate on long lines and a diminishing rate of flow on short lines from the average value of 0.00015 cubic foot per second.

TABLE VI.

Grade.	Quantity of water required to flush.		
	8 inches diameter.	10 inches diameter.	12 inc es diameter.
Per cent.	*Cubic feet.*	*Cubic feet.*	*Cubic feet.*
½	80	90	100
¾	55	65	80
1	45	55	70
2	20	30	35
3	15	20	25
4	10	15	20
5	8	10	15

These results indicate that a very considerable modification of the volume of water should be allowed for lines of different gradient, and that the required volume diminishes very rapidly with an increase of grade; also that it is affected to a smaller extent by the size of the sewer; that for all sizes no flush tanks are probably required on slopes exceeding 2 per cent, and it may be inferred in such cases also that flushing at less frequent intervals is needed than the 24 to 48 hour discharge.

The rule previously alluded to is given by the manufacturer of the Van Vranken siphon, and is as follows:

The capacity of the basin should be equal to that of one-half the length of sewer in which the grade produces a rise equal to the diameter of the pipe.

For the purpose of comparison with the formula already given we may readily reduce this statement to the form

$$Q=\frac{3.14\ R^3}{S},$$

in which Q, quantity of water in cubic feet; R, radius of the pipe in feet; and S, grade.

In this formula it appears Q varies as the third power of the radius. That this does not seem to satisfy the hydraulic conditions imposed may be readily seen, for example, in the case of a 10-inch diameter and a 12-inch diameter pipe, the quantities for which should not greatly differ. Only about one-half the volume is given for one as for the other. Also Q varies directly as the slope, giving but one-half the quantity for an 0.8 as for a 0.4 per cent grade. The effect of changes in size and grade are thus considerably exaggerated, as inspection of the formula at once indicates.

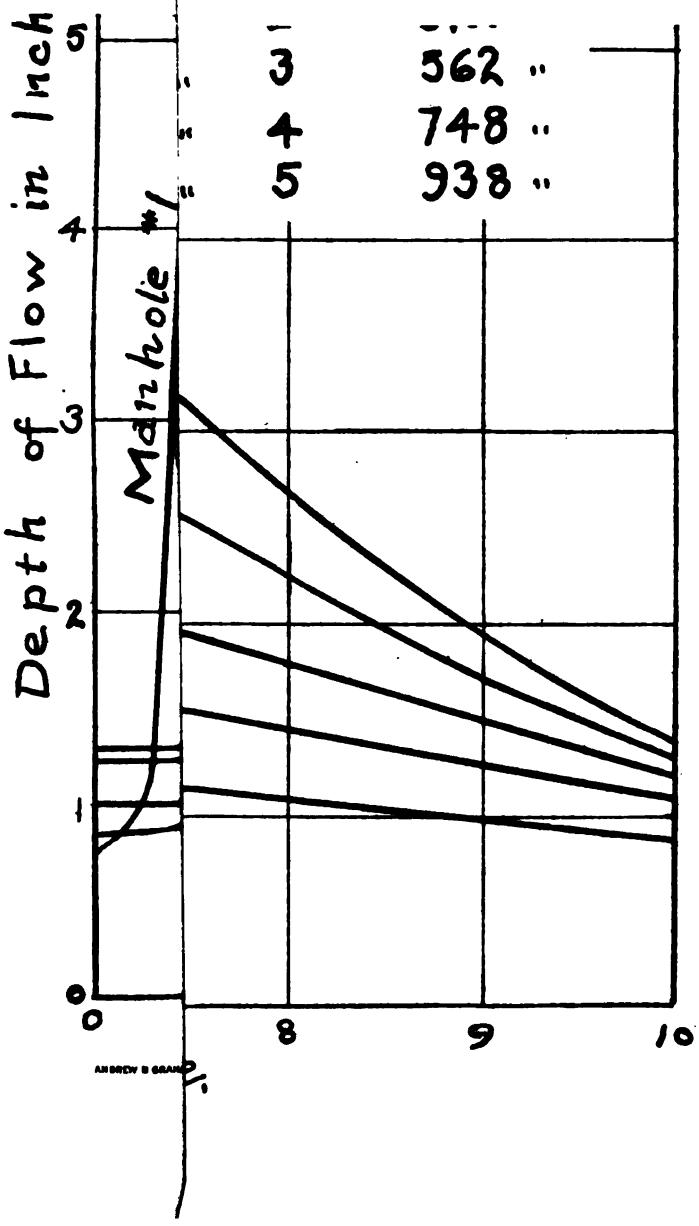
To a smaller degree the proper proportioning of the flush tank would seem of the same importance as that of the sewer itself. But in communities having a limited supply of water the question becomes more serious, and in one case,* at least, has seemed to justify abandoning the use of automatic flushing altogether.

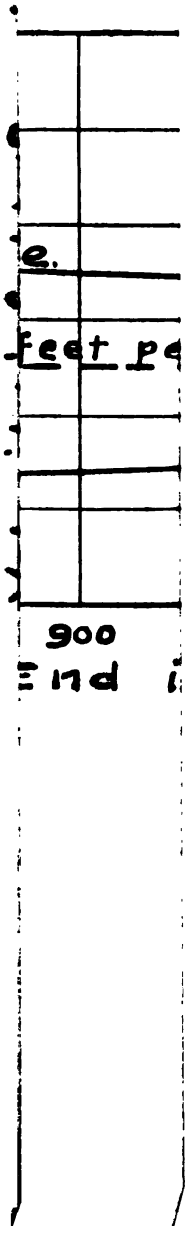
*Mount Vernon, N. Y., semiannual flushing. Water mains connected direct with sewers at dead end. See Trans. Am. Soc. C. E., Vol. XXXIV, No. 3.

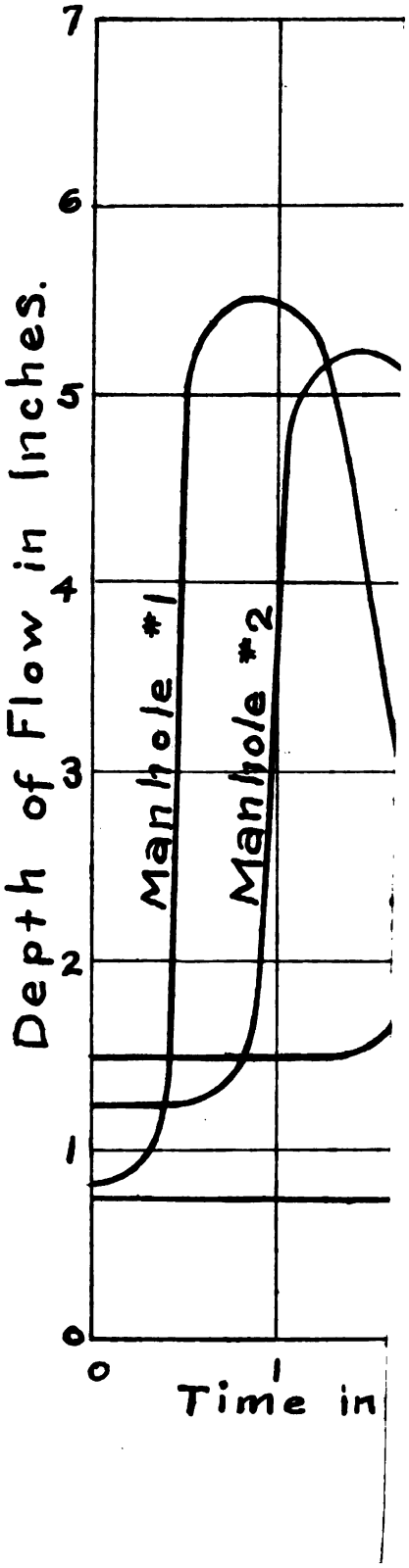
The employment of an insufficient volume of water to effectively flush is an error of no less consequence, and probably has brought the flush tank into some disfavor, for a small discharge has been found to exhaust its effect within a short distance of the dead end without accomplishing the work intended, while at the same time the annual expenditure of water has been large and more than sufficient for a thorough, if less frequent, flushing by other means. No arbitrary minimum for the capacity of the basin can be stated, but it seems probable that for lines requiring less than 300 gallons automatic flushing had best be omitted. And finally, it would appear that the flushing device can hardly be expected to impart a cleansing velocity on grades too small to maintain the same.

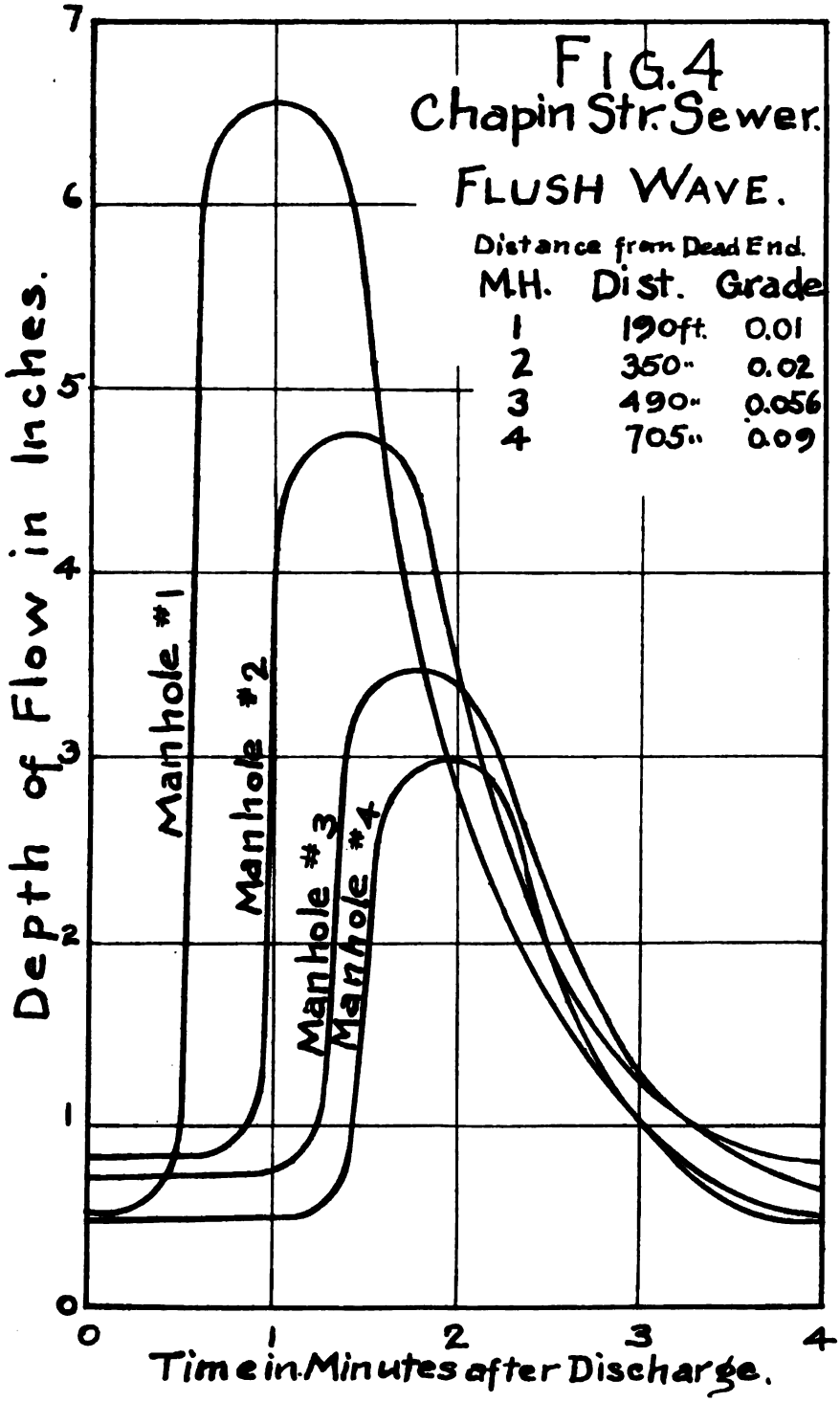
As has been seen, no attempt is here made to indicate the results with a variable volume of discharge for the purpose of determining the comparative radius of effect under such circumstances. This and other interesting details are necessarily omitted, an effort having been made only to show the general influence of the slope on the flush, and, in a limited way, the range of effect.

In conclusion, it may be said that the formula suggested is not expected to satisfy exactly all of the fixed hydraulic conditions of the problem. That it approaches the form which such an equation should have and indicates the limits governing the use of flushing devices is all that can be said.

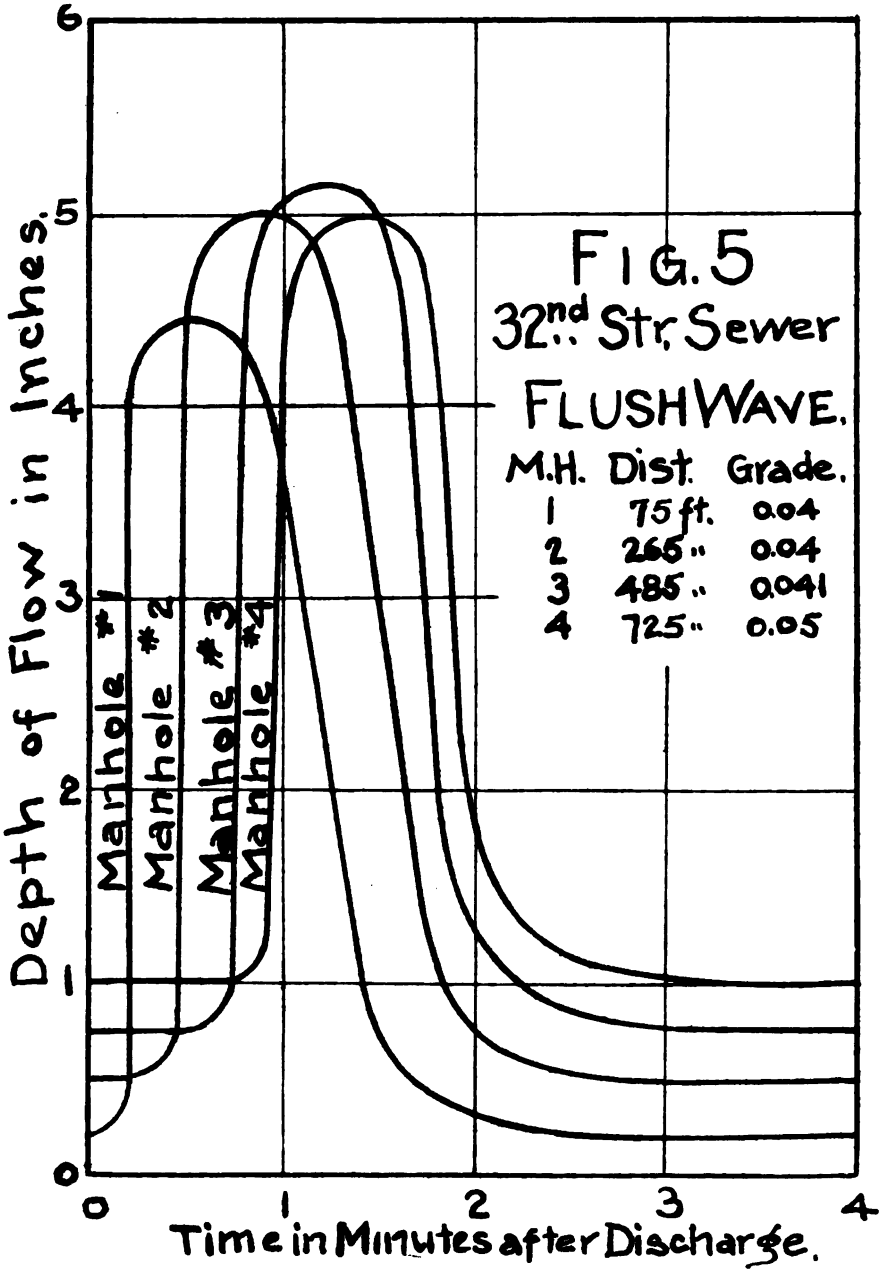

Depth of Flow in Inch
Manhole #1
3 562 "
4 748 "
5 938 "
0
1
2
3
4
5
0
8
9
10


900
End


Depth of Flow in Inches.
0
1
2
3
4
5
6
7
Manhole #1
Manhole #2
0
1
Time in



ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.



ANDREW B. GRAHAM, PHOTO-LITHO WASHINGTON, D.C.

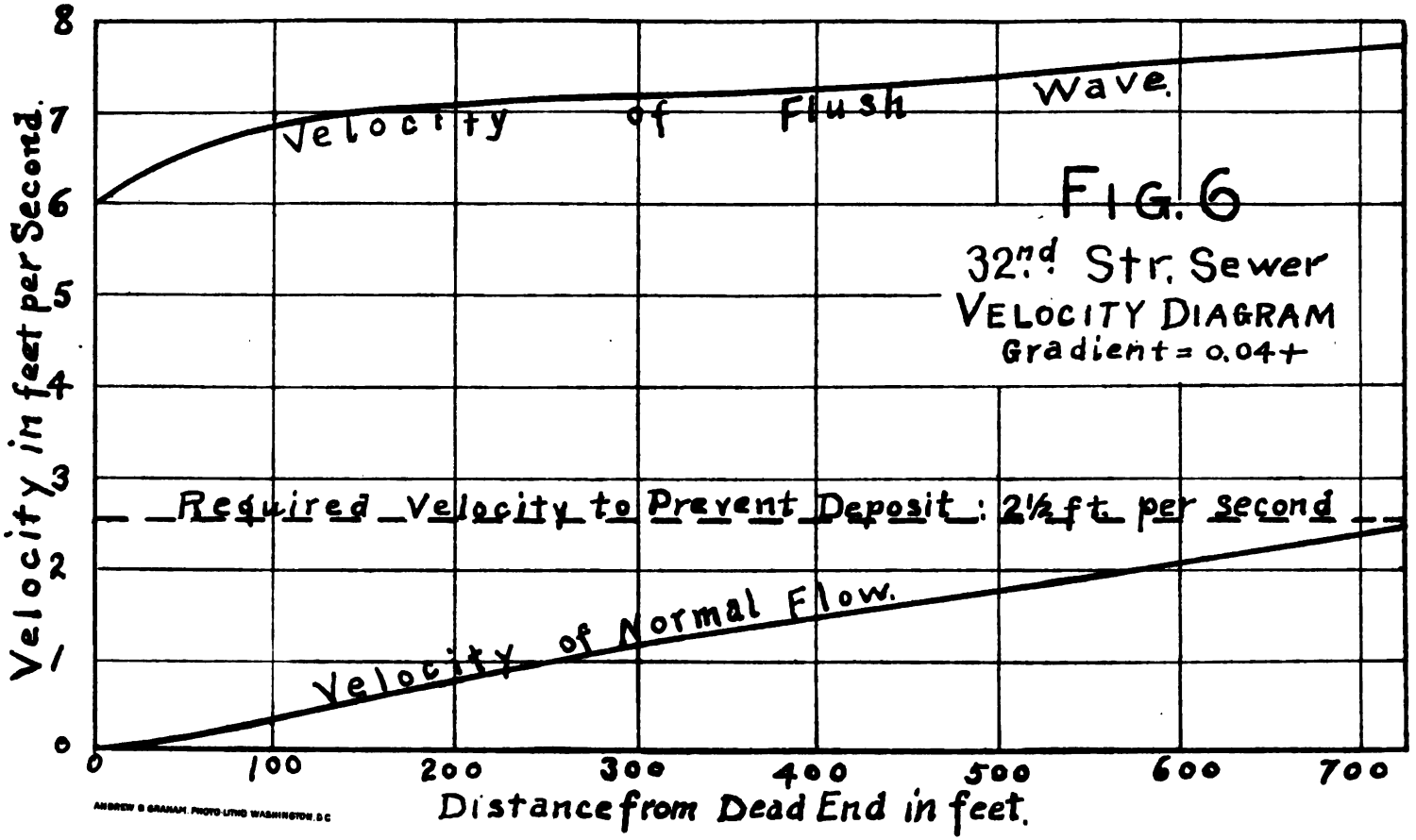


FIG. 6

32nd Str. Sewer

VELOCITY DIAGRAM

Gradient = 0.04+

REPORT OF COMMITTEE ON MUNICIPAL DATA, AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS, WASHINGTON, D. C., OCTOBER, 1898.

[Charles Carroll Brown, Bloomington, Ill., chairman; Capt. Lansing H. Beach, Washington, D. C.; Almon D. Thompson, Peoria, Ill., committee.]

To the American Society of Municipal Improvements.

GENTLEMEN: Your committee on municipal data assumes that it was appointed in accordance with the recommendation of August Herrmann in his annual address as president of the American Society of Municipal Improvements, at its meeting in Nashville, Tenn., in October, 1897, contained in the following extract from that address:

> I would further recommend that a special committee, to be known as a committee on municipal data, be appointed, and that this committee be instructed to formulate a plan providing for the enactment by Congress of the necessary legislation looking toward the more complete establishment and maintenance by the Government of a national bureau on municipal data, with a view of having collected through it annually and formulated for publication and distribution a complete report with respect to municipal and public work of all kinds, showing the kind and quality of material used, the methods employed, the comparative cost thereof, the results obtained, the manner of using it, the conditions under which the work has been done, the manner of payments and guaranty, and such other information of importance relative thereto as the committee may deem advisable, the same to be submitted for the consideration of the society at its next annual meeting, and if it meets with the approval of the society, that such steps be taken at that time as may be necessary, with the view of having the same transmitted to Congress with a recommendation that laws be enacted to put the same into effective operation.

We have carefully considered the matter intrusted to our charge, and fully concur in the opinion of Mr. Herrmann, expressed in a letter to our chairman, in which he says:

> I think it a very important department, and if ever established by the Government will be very useful to all municipalities throughout the country, and I have no doubt but that, if your committee brings in a proper report, and the members of the society would take a proper interest in the matter with their Congressmen of the localities which they represent, the matter can be successfully arranged.

We have discovered that several methods of procedure are open, of varying degrees of importance, and that the difficulties of setting in motion the machinery necessary to carry the projects to a successful issue, and the time necessary therefor, are in inverse ratio to their importance. All these modes of procedure are open to us at once, and we think that progress can be made in all at once, that in the more comprehensive plans being greatly aided by the work done in the less important lines.

1. We begin with the portion of the project most nearly under the control of the membership of the society.

An examination of the annual reports of municipal departments shows great lack of uniformity. Much of this is due to the great differences in methods of keeping accounts, and of beginning and carrying forward public works, on account of the differences in State laws,

in city charters, and in local conditions. We think, however, that the variations in form and matter of reports can be reduced very greatly by agreement to follow, as closely as laws and fixed methods will permit, forms of report proposed by such a body as this and recommended by you and by competent governmental authority as models for the municipalities of the nation.

There are in many reports evidences of lack of coordination of departments; of duplication of reports, under circumstances such as to render them even contradictory of each other; of separation of work among several departments which should properly belong to one; and of consequent inability to obtain any adequate idea of the economy of operation of the departments, and to prevent duplications and omissions, which produce waste and serious difficulties. Coordination and cooperation of departments will be facilitated by forms such as are proposed if the city departments are required by law or ordinance to cooperate in giving full information upon the various items of the schedules in their annual reports.

Many reports, especially among the smaller cities, are very meager in their statements regarding the operation of the departments in their technical details, while they are very full of detail as to the exact amount paid on each individual voucher allowed during the year. The forms proposed, so far as they are applicable, will bring order out of this chaos and enable the authorities to see the extravagance or economy of their methods of construction and operation.

Many other points of a similar nature might be made.

It is doubtless true that circumstances vary so greatly in different localities that comparisons of operations in different cities are not very satisfactory, and in some cases are very misleading, but the fact remains that very valuable conclusions can be drawn from general comparisons of this sort, and much important information gathered from the study of such reports. The schedules presented herewith are intended to cover the larger items, such as can most readily be compared in reports of different municipalities, but they are also intended, as indicated therein, for models upon which to form other more detailed schedules, covering the most minute items of construction and operation. The comparison of reports made on such schedules from year to year is perhaps the most valuable use to be made of the scheme, an intelligent study of the reports enabling the authorities to discover the places where errors of judgmenthave been made and to determine what improvements may be made in methods and the results of adopted courses of procedure. The exact forms of these detailed schedules depend so closely upon the local circumstances and the personal preferences of the supervisors of the work that they are left to the judgment of these officers without recommendation.

The general lines of reports are so nearly alike in the nature of the case that it is believed the forms presented, when modified by the combined wisdom of the society, can be closely followed to great advantage, individually and collectively, by practically all cities.

The committee presents forms of waterworks reports prepared by the chairman, of sewerage reports prepared by Mr. Beach, and of street reports prepared by Mr. Thompson, each having had special opportunities of study in the line assigned to him. It suggests that forms for other lines of municipal work be prepared by experts in those lines, to be added to these forms if they are deemed worthy of adoption by the society.

2. One of the duties of the next session of Congress will be the establishment of a bureau for the census of the year 1900. A beginning was made in the last census in the collection of municipal data, but those of us who have tried to extract anything from the data offered have found the reports of little value for most purposes. This is due, largely, of course to the incompleteness and lack of uniformity in the information furnished by the municipalities, but is due almost as largely to the form of report adopted and the lack of system in many of the classes of items on which information was requested.

It is therefore recommended that when the schedules are amended, enlarged, and adopted by the society a resolution be adopted recommending the adoption of the schedules by the Census Bureau as the forms for reports requested by that office from the municipalities of the nation, and that a committee be appointed to present this resolution to the proper authorities at the proper time, to press it upon their attention, and to secure adoption if possible.

3. The establishment of a new bureau in any Department of the Government is a serious matter, requiring much thought and great labor. The first question arising in relation to the bureau proposed by Mr. Herrmann is as to the Department to which it should be assigned.

It is the opinion of this committee that a permanent Census Bureau is a desideratum. The collection of municipal statistics pertains properly to such a bureau. Your committee therefore recommends the passage of resolutions recommending the establishment of a permanent Census Bureau, with powers and facilities for collection of various kinds of statistics at any and all times, as required by Congress, and for the inclusion of a bureau of municipal statistics in the permanent provision for departments in such permanent Census Bureau; the appointment of a committee to present this resolution to Congress in such manner as they may deem most effective, and an appeal to the municipalities represented in this society and at large for aid in presenting the matter effectively to Congressmen and others of influence in shaping such legislation, such appeal to be presented in such manner and at such times as the members of the committee and the executive board of the society shall deem expedient.

The schedules for reports mentioned in this report follow as an appendix hereto.

PROPOSED FORMS OF STREET CONSTRUCTION REPORTS.

PAVEMENTS, CITY OF ———, STATE OF ———.

GENERAL STATISTICS.

Heads of columns are as follows:
(Items of information.)
Asphalt, sheet.
Asphalt, block.
Brick.
Wood, cedar block.
Wood, pine block.
Granite.
Sandstone.
Limestone.
Cobblestone.
Miscellaneous pavements.

The right-hand column of items of information contains the following lines:

Total square yards in city.
Total miles in city.
Square yards laid in 18——.
Miles laid in 18——.
Year first laid.
Maximum grade of pavement.
Guaranteed period, years.
Maximum cost per square yard in 1898.
Minimum cost per square yard in 1898.
Average cost per square yard in 1898.

Footnotes:

Explain fully the items included in the price per square yard as given in each case.
Explain fully the conditions of traffic to which each class of pavement has been subjected, such as heavy, medium, light, and the satisfaction each has given in wear, with reasons.
Give extremes of temperature during year.

CONSTRUCTION DATA.

I. Sheet asphalt:
1. Kinds of asphalt laid.
a. Number of square yards of each kind of asphalt now laid.
b. Number of miles of each kind of asphalt now laid.
c. Name kinds of asphalt admitted by the specifications now in force.
2. Foundation:
a. Character—sand, gravel, concrete, etc. If concrete, give proportions of various ingredients.
b. Thickness, inches.
3. Asphalt surface:
a. Total thickness, inches.
b. Is cushion or binder coat used?
c. Thickness of same, inches.
d. Thickness of wearing surface, inches.

II. Block asphalt:
1. Size of block.
2. Foundation.
a. Character—gravel, macadam, concrete, etc. If concrete, give proportions of various ingredients.
b. Thickness, inches.
3. Cushion.
a. Material.
b. Thickness, inches.
c. Material used for filler.

III. Brick:
1. Size principally used.
2. Single or double course used.
3. Foundation.
a. Character—gravel, macadam, etc. If concrete, give proportions of various ingredients.
b. Thickness, inches.
4. Cushion.
a. Material.
b. Thickness, inches.
5. Filler.
a. Material.
b. Merits and faults of each kind used.

IV. Wood:
1. Blocks.
a. Kinds.
b. Size.
2. Foundation.
a. Character—macadam, plank, gravel, etc. If concrete, give proportion of various ingredients.
b. Thickness, inches.
3. Cushion.
a. Material.
b. Thickness, inches.
4. Filler.
a. Material.

V. Granite:
  1. Blocks.
    a. Kind of granite.
    b. Size of blocks.
  2. Foundation.
    a. Character—macadam, gravel, etc. If concrete, give proportions of the various ingredients.
    b. Thickness.
  3. Cushion.
    a. Material.
    b. Thickness, inches.
  4. Filler.
    a. Material.

VI. Miscellaneous pavements:
  1. Description.
  2. Foundation.
    a. Material. If concrete, give proportions of various ingredients.
    b. Thickness, inches.
  3. Details of cushion and filler if used, and other points of construction.

PRICES FOR MATERIAL AND LABOR.

1. Give market prices of the following construction materials delivered on the work or of such of them as are used in paving work:
   a. Broken stone for concrete, per cubic yard.
   b. Broken stone for macadam, per cubic yard.
   c. Sand, per cubic yard.
   d. Gravel, per cubic yard.
   e. Cement, per barrel, natural.
   f. Cement, per barrel, Portland.
      Imported.
      American.
   g. Filler, other than sand, per square yard of pavement.
   h. Curbing, per linear foot.
      Material.
      Setting.
   i. Excavation and removal of material to make place for pavement.
      Per cubic yard.
      Average per linear foot of street.
2. Give prices paid for the following kinds of labor:
   a. Common labor, per day.
   b. Foreman, per day.
   c. Man and team, per day.
   d. Concrete mixers, per day.
   e. Pavers, per day.
   f. Length of working day, hours.

FINANCIAL STATISTICS.

1. Total amount expended for pavements in 18—.
2. Total amount of outstanding indebtedness for pavements.
   City debt.
   Property owners' debt.
3. Proportion of cost paid by city.
   property owners.
4. Explain briefly the method of assessment, by frontage or area of contiguous property, etc. Does noncontiguous property pay portion of cost? If so, what per cent?
5. Explain briefly method of paying assessment, cash yearly installments, etc.
6. Bonds issued to anticipate installments.
   Length of time they run.
   Amounts in which issued.
   Interest, per cent per annum.
   Are bonds a general city charge or are they a lien on the property assessed?

DETAIL TABLE OF STREETS CONSTRUCTED. (ONE FOR EACH KIND OF PAVEMENT.

Heads of columns are as follows:
- Location.
- Authority for construction.
- Contract and contractor.
- Length.
- Width.
- Area, square yards, including wings and intersections.
- Length of curb.
- Other items of materials and labor.
- Cost:
  - Excavation.
  - Foundation.
  - Wearing surface.
  - Curb.
  - Other items.
  - Total.
- Cost per square yard:
  - Total.
  - Excluding excavation.
  - Excluding excavation and curb.

PROPOSED FORMS OF WATERWORKS REPORTS.

The following schedules, proposed as forms of waterworks reports, have all been taken from forms of municipal waterworks reports in actual use. No one report contains all of them, but every item in every schedule is used in some such report. It is not probable that any one report would require all the schedules proposed. The attempt has been made to give forms for all the general schedules that might be required by any system of management in use. Many additional forms for reporting details are used by various waterworks authorities, but no attempt has been made to cover this part of the field, the diversities in methods of keeping accounts being too great, and the importance of such reports being too slight, to make this desirable. Some may consider that too many schedules have been given, but it is probable that all would not agree on the omission of any one schedule. They are presented with the hope that cutting down will be deemed necessary rather than additions:

WATERWORKS OF THE CITY OF ———, ——— COUNTY, ——— STATE, YEAR ENDING ———, 18—.

Population by census of 1890, ———; of 18—, ———; estimated at date, ———.

Ownership of works.

Dates of construction. Items.

Sources of supply—whether lake, river or stream, springs, wells, deep or surface.

Mode of supply—whether gravity from storage or distributing reservoir, pumping to storage or distributing reservoir, direct pressure, with or without standpipes.

Reservoirs—size and capacity of each, with elevation above point stated.

Standpipes—size and capacity.

Settling basins—size and, capacity.

Filters—kind, size, and capacity.

Wells—number, kind, size, depth, level of water, pumps working and not working, greatest and least supply.

Pumping plants—size and capacity of each engine, totals for each station and for entire city. Boilers—number, size, and rated capacity.

Pressure at pumps—maximum and minimum pressure in pipe or distribution system; additional for fires.

Suction lift, in feet.

Total miles of pipe.

Total number of service connections.

Total number of hydrants.

Total number of meters.

Total number of public fountains and watering troughs.

Tabular statement of entire issue and redemption of bonds.

Heads of columns are as follows:
- Number of issue.
- Authority for issue.
- Date of issue.
- Date when payable.
- Amount.
- Rate of interest.
- Amount redeemed.
- Date of redemption.
- Amount outstanding.

Right-hand column contains the numbers of the consecutive issues of bonds, with line at foot for totals.

Total cost and present valuation of works.

(This table contains all items that can properly be charged to construction, and does not contain any that belong properly to maintenance and repairs.)

Heads of columns are as follows:
- Real estate, including lands and buildings, giving as many subitems as may be desired.
- Reservoirs and standpipes, with subheads for each and for total of all.
- Pumping system, with subheads for each and for total of all.
- Supply mains.
- Distribution system.
- Service connections.
- Meters.
- Engineering.
- Administration, including office and field outfits necessary.
- Total cost of works.

The right-hand column contains in order:
- The consecutive numbers of years since construction began.
- The total costs of constructions.
- The total amount deducted from cost at date of last report for constructions abandoned, replaced, or otherwise disposed of.
- The amounts so deducted during the year.
- The totals of the two preceding lines.
- The present valuations, being the differences between the total costs and the total deductions.

Annual receipts.

Sales of water:
- Regular rates.
- Special rates.
- Meter rates.
- Meter rents.
- Fire hydrants.
- Street sprinkling.
- Delinquent rates.
- Other city purposes.
- Miscellaneous.

Connections, including materials.
Permits and licenses.
Other special items, as desired.
Total receipts from operation of works.
Bonds.
Interest.
Direct taxes (frontage, etc.).
City tax levy or appropriations from general funds.
Real estate, sales or rentals.
Sales of other property.
Grand total receipts for the year.

Annual disbursements.

(Details of each of the following items should be given in separate statements with the minuteness desired.)

General items:
- Refunds.
- Interest.
- Bonds retired.
- Sinking fund.
- Paid to city funds.
- Stock on hand and cash balance on hand to balance statement of receipts.
- Total of general items.

Construction, supply system:
- Reservoirs and standpipes.
- Intakes and wells.
- Filters.
- Meters.
- Pumping works, buildings and ground.
- Pumping works, engines and boilers.
- Shops and other buildings.
- Supply mains.
- Engineering.
- Total of supply system.

Construction, distribution system:
- Street mains.
- Tapping or plumbing department.
- Total of distribution system.

Total of all construction.

Maintenance and repairs:
- Reservoirs and standpipes.
- Intakes and wells.
- Filters.
- Buildings and grounds.
- Engines and boilers.
- Shops and other buildings.
- Supply mains.
- Street mains.
- Other items as desired.
- Total maintenance and repairs.

Operation:
- Pumping expense.
  - Salaries and labor.
  - Fuel, including delivery.
  - Supplies. (Oil, waste, etc.)
  - Total pumping expense.
- Service connections.
- Meter service.
- Hydrant service.
- Transportation of men and materials.
- Office salaries and labor. Administration.
- Total cost of operation.

Total disbursements.

Comparative statement of operation.

Heads of columns are as follows:
- Year.
- Receipts from operation of works.
- Total operation expenses.
- Total maintenance and repairs.
- Net earnings above total operating, maintenance, and repairs.
- Interest on bonds paid, stating whether from waterworks receipts or from city funds.
- Sinking-fund payments made, giving similar statement.
- Total gallons of water pumped.
- Revenue per million gallons.
- Total cost of operation, maintenance, and repairs per million gallons.

Right-hand column gives consecutive numbers of years since works began operation.

Comparative meter statement.

Heads of columns are as follows:
Year.
Number of water takers.
Number of meters.
Total amount of water consumed.
Amount estimated as used for public purposes, not metered.
Total amount of water metered.
Total receipts for water.
Total receipts for metered water.

Right-hand column gives numbers of consecutive years since works began operation.

Water pipe in use.

Heads of columns are as follows:
Size and kind of pipe.
Length in use at beginning of year.
Length added during the year.
Length discontinued during the year.
Length in use at end of year.
Total cost.
Per cent each size is of the total length of pipe in use.
Per cent each size is of the total cost of pipe in use.
Number of service connections.
Length of service connections. (Each size if desired.)
Number of hydrants.
Number of valves.

Right-hand column has line for each size and kind of pipe and for total.

Cost of pipe laying.

Each line laid may be described as follows:
Location of line.
——— feet of —— inch pipe—weight —— pounds, cost $———.
Pipe inspection, cost.
Valves—number ——, size ——, cost $———.
Fire hydrants—number ——, description ———, cost $———.
——— feet —— inch hydrant pipe, cost $———.
Special castings—description———, number——, pounds———, cost $———
——— pounds lead, cost $———.
Coal, packing, and incidentals cost.
Labor cost.
Total cost of pipe laid.
Cost of paving.
Total cost complete.
Average cost of labor, per foot.
Average cost of pipe laid, per foot.
Average cost of pipe laid and paving complete, per foot.

Tables of pumping records for the year.

[One for each pump or each group of pumps acting together.]

Heads of columns are as follows:
Month.
Days pump was run.
Hours pump was run.
Number of revolutions.
Average number of revolutions a minute.
Pump cylinder dimensions.
Length of stroke.
Number of gallons pumped.
Total for all engines in group,
Average per twenty-four hours.

Heads of columns—Continued.

Pounds of coal consumed, including all used for pumping, banking, heating, etc.
Steam cylinder dimensions.
Average steam pressure, ——; maximum, ——; minimum, ——.
Average water pressure at pump, ——; maximum, ——; minimum, ——.
Average suction lift, ——; maximum, ——; minimum, ——.
Total lift of water, including friction.
Pounds of ashes removed.
Duty per 100 pounds of coal.

Right-hand column contains a line for each month in the year, total for the year, and averages.

Cost of pumping.

[Table for each station.]

Population served, if possible.
Builder and kind of each pumping engine, and cost.
Number and kind of boilers, size, and cost.
Cost of station buildings and other appurtenances. (Divide into independent groups if more than one group in station, for the following items.)
Daily capacity of each engine.
Hours each pump was run during the year.
Days each pump was run during the year.
Number gallons pumped a day. Average, ——; maximum, ——; minimum, ——.
Total gallons pumped in year.
Average feet lift, including friction. (Delivery, pressure, and suction.)
Average feet lift, static.
Pounds of coal used during year, including wood reduced to coal, and with no deductions for heating or other purposes about station.
Kind of coal used, size and brand.
Cost per 2,000 pounds, delivered at station. (If different kinds of coal are used, separate into items for each kind; or, if this is impossible, give average cost per ton of all coal used.
Pounds of ashes removed.
Gallons pumped to stated average lift with 100 pounds of coal.
Gallons pumped 100 feet high with 100 pounds of coal.
Duty of engine per 100 pounds of coal.
Quarts of engine oil used.
Quarts of cylinder oil used.
Total cost of fuel during the year.
Total cost of labor in pumping for the year.
Total cost of oil, waste, and supplies for the year.
Total cost of ordinary repairs in pumping for the year.
Total cost of pumping for the year.
Average cost of each above item for 1,000,000 gallons to given average lift.
Average cost of each above item for 1,000,000 gallons to lift of 100 feet.

Monthly consumption of water.

Heads of columns are as follows:

Month.
Number of gallons pumped.
Metered.
Not metered and waste.
Average daily consumption.
Average per capita on estimated population.
Number of takers or taps.
Number of meters.
Estimated number of consumers.
Maximum day's consumption or pumping.
Minimum day's consumption or pumping.

Right-hand column gives names of months and total.

Comparative statement of consumption.

Heads of columns are as follows:

Year.
Population, census or estimated.
Estimated number of consumers.
Total gallons pumped per year.
Average gallons pumped per day.
Average gallons per inhabitant per day.
Average gallons per consumer per day.

Cincinnati keeps a balance sheet in about the following form, which may be of interest to some:

Balance sheet for year 18—.

Heads of columns are as follows:

1. Names of ledger accounts.
2. Totals of each ledger account, paid out.
3. Totals of each ledger account, received or on hand.
4. Operation, paid for maintenance and expenses.
5. Operation, received for rents, sales, etc.
6. Construction, paid.
7. Construction, footing of previous column entered in this to balance represents total cost of construction.
8. Valuation of waterworks, footing of the following column entered in this to balance represents total value of works (net capital).
9. Valuation of waterworks, value at beginning of year and additions during year entered in this column.
10. Balances, assets.
11. Balances, liabilities.

(Columns 2 and 3 have same total. The balance of columns 4 and 5 goes to column 8 or 9, usually 9. The balance of columns 6 and 7 goes to column 10. The balance of columns 8 and 9 goes to column 11. Columns 10 and 11 have the same total.)

The items in the right-hand column may be carried to any desired degree of detail. The following are suggested after a study of those given in the Cincinnati report. Each item appears in columns 2 or 3, or both, and in others as stated below:

Names of ledger accounts.
Total valuation of waterworks, to column 9.
Waterworks bonds, to column 11.
Sinking fund, to column 10.
City treasurer, to column 10 or column 11.
Interest account, to column 4.
Cash account, to column 10.
Water rents, to column 5.
Office expense, to column 4.
Office fixtures, to column 6.
Pumping stations, maintenance, to column 4. Items for each station construction, to column 6.
Reservoirs, standpipes, tanks, items for each one for maintenance and construction, to column 4 and column 6, respectively.
Street mains, extensions, to column 6.
Street mains, repairs, to column 4.
Supply mains, extensions, to column 6
Supply mains, repairs, to column 4.
Hydrant service, to column 4.
Tapping service, to column 5.
Engineer department, to column 4.
Repair department, to column 4.
Administration, to column 4.

Erie, Pa., carries a statement of the standing of the account of the waterworks with the city, which shows whether the works are self-sustaining or not, and to what extent they are paying for themselves, when all allowances are made. The items of the account are as follows:

Due from waterworks to city at last report.
Received from bonds issued during the year.
Received from taxes or appropriations during the year.
Interest on first item above at rates of interest of outstanding bonds, remainder at 4 per cent for one year.
Interest on new bonds issued from date of issue to end of year.
Office rent, if in city building.
Total.
Cash to city funds. (Designate.)
Water furnished city. (Items and amounts to be charged therefor.)
Total.
Balance due from waterworks to city at date of this report.

Following are headings of other tables that may be desired by some from time to time:

Hydrant locations.
Valve locations.
Pipe distribution.
Comparative statement of yearly pipe laying.
Meter distribution.
Service pipes added, discontinued, and totals.
Permits issued.
Buildings examined.
Rainfall records.
Fire alarms.
Rate sheet.
Present valuation of works.

PROPOSED FORM FOR SEWER REPORTS.

GENERAL STATISTICS.

Systems in use:
Separate or combined.
Method of disposal of sewage.
Interceptors.
Sewage allowance per capita.
Storm-water formula or rule, with reasons for any modifications.
Discharge formula.
Special local features affecting system.
Guaranty period under contract.
Location of sewer in street—center, sidewalks, single or double line for street, etc.
Rule for depth.
Y or T branches used or not; if so, on what sewers; if not, manner of making house connections.
Difficulties of maintenance encountered.
Flushing methods.
Have sewers ever been overtaxed? If so, particulars.
Is sewage pumped? If so, by centrifugal or plunger pumps.

CONSTRUCTION DATA.

Amount of pipe sewers in use at beginning of year.
Amount of other sewers in use at beginning of year.
Amount of each laid during year.
Amount of each at end of year.
Sizes and forms used, circular, egg shaped, pipe, etc.
Lining material.
Average amount of each size built per day.
Character of excavation; average and extremes.
Foundations used, if any.
Special constructions.
Concrete, methods of mixing and placing.
Method of consolidating trench back filling.

LABOR AND MATERIALS.

Cost of materials, cement, sand, brick, gravel, broken stone, pipe, each size, etc.
Cost of labor per hour, different classes.
Cost of wagons and carts per hour.
Cost of foremen.
Cost of superintendence.
Cost of excavation, per cubic yard.
Cost of sewer per linear foot.

FINANCIAL DATA.

Total amount expended during year for sewers.
Total amount expended to date for sewers.
Manner of raising money expended.
Total amount of outstanding indebtedness—city's portion, property owner's portion.
Proportion of cost paid by city and property owners.
Method of assessment, by frontage or area of contiguous property.
If noncontiguous property pays any portion of cost, manner and amount.
Methods of paying assessments.
Bond issue, if any—period, amounts, interest, redeemable; whether general city charge or lien on property assessed.

THE SEWAGE DISPOSAL PROJECT FOR WASHINGTON, D. C.

[By D. E. McComb, superintendent of sewers, District of Columbia.]

The city of Washington is situated at the junction of the Potomac and Anacostia rivers, Rock Creek forming a portion of its western boundary.

The main drainage areas were originally Tiber Creek, 5,550 acres, 2,950 acres of which were outside of the city limits; St. James Creek, 600 acres, and Slash Run, 810 acres, 160 acres of which were outside of the city limits. In addition, 200 acres drained directly to Rock Creek, 1,300 acres drained directly to the Anacostia River, and 700 acres drained directly to the Potomac River. The surface elevation of the lower portion of the Tiber Creek Valley and of the valley of St. James Creek was but a few feet above mean high-tide level in the Potomac River, and the street grades over a portion of these areas containing about 400 acres, including Pennsylvania avenue between Second and Thirteenth streets west, are between 7 and 12 feet above mean high-tide level. This area is subject to flooding during extreme stages of high water in the Potomac River, resulting in damage to property, on account of which the city is at present the defendant in a large number of suits at law.

In the year 1832 the construction of the Washington Canal between the Potomac and Anacostia rivers by way of the lower portion of the Tiber Valley from the Potomac River near the foot of Seventeenth street to Third street west, thence by way of Third street and Canal street to the Anacostia River, furnished a trunk line of drainage for the greater portion of the improved section of the city. A few drains and sewers were constructed prior to the introduction of the Potomac water supply in the year 1858, and after that year the construction of sewers, most of which discharged into the Washington Canal, became a prominent feature of municipal expenditure. It was not very long before complaints were made of the filthy condition of the canal, and many suggestions were offered for its improvement. One proposition was to create a current by the use of a propeller wheel; this was long before the Bensingburg-Reynolds screw pump was so successfully installed in Milwaukee for the same purpose.

When the form of government was changed, in 1871, and the Board of Public Works began its task upon the comprehensive plan of improvements, one of the first problems for solution was the improvement of conditions in this main drainage line. It was decided to construct two trunk sewers to take its place, one of which was located in B street between Seventh and Seventeenth streets, and is known as the B street sewer; the other sewer was located in Missouri avenue, Third street, and Canal street, discharging into the James Creek Canal, thence into the Anacostia River. The portion of this sewer which is located in Third and Canal streets also extends northward from Missouri avenue, and is known as the Tiber sewer.

When the Potomac Flats were filled, a canal was constructed from the outlet end of the B street sewer to the bulkhead line, which is known as the Seventeenth street canal. After the B street and Tiber sewers were completed, the Washington Canal was filled, and the lateral sewers were connected with the trunk sewers above described. In a short time it was discovered by the board of public works that the Tiber sewer was inadequate, and a sewer was constructed along Florida avenue from Second street east to Cool Spring Run, near the intersection of Seventeenth and E streets, which was intended to intercept all drainage from the territory northward from Florida avenue between Second and Fifteenth streets east. This sewer did not meet the expectation of its designers, and the northeast boundary sewer was constructed (1879–1885) for the purpose of intercepting all drainage from the territory northward from Florida avenue which formerly reached the Tiber sewer. Although relieved of a large amount of drainage, the Tiber sewer was still inadequate, and storms of exceptional severity contributed an amount of drainage beyond its capacity. A trunk sewer was constructed by the Board of Public Works in the valley of Slash Run. It was found necessary to relieve that sewer by intercepting sewers in Q street and Florida avenue.

By these sewers the sewage of Washington was discharged into the Seventeenth Street Canal, the James Creek Canal, Cool Spring Run, Rock Creek, and a small amount directly into the Anacostia and Potomac rivers. The discharge of sewage into these canals and into Rock Creek caused in a short time a state of nuisance to exist in each of these bodies of water, and the attention of Congress was invited to the necessity for providing more adequate means of sewage disposal. In 1890 a report was submitted by a board of sanitary engineers provided for by Congress and appointed by the President of the United States, consisting of Rudolph Hering, Samuel M. Gray, and Frederic P. Stearns, in which was recommended the construction of intercepting sewers to convey practically all of the sewage to a pumping station at the southerly end of New Jersey avenue, there to be raised and discharged into an inverted siphon laid under the bed of the Anacostia River from the pumping station to Poplar Point, from which a trunk sewer is proposed to Magazine Point, where the sewage will be discharged into the Potomac River. This point was selected in order that the sewage discharged should not be carried back to the portion of the river adjacent to the city by the tides.

The subject of sewage disposal could not be separated from that of protecting the low-grade section of the city from flooding during high stages of the Potomac River. With this in view, it is proposed to construct a dike along the line of Virginia avenue, crossing the Tiber Valley, and another dike along the line of N street south, crossing the St. James Creek Valley. Intercepting sewers are provided to divert as far as possible the drainage from the higher areas which reach this section, and the main drain will be of sufficient capacity to convey, in addition to the sewage, the storm water of the low-grade section. At the pumping station auxiliary pumps will be provided to discharge into the Anacostia River this storm water. At ordinary stages of the river the drainage from the low-grade area will be discharged by gravity into the Anacostia River, except the drainage from the parked area, which will be discharged into the Potomac River by means of the B street sewer.

The amount of sewage to be provided for was assumed at 20 cubic feet per head per day, including ground water reaching the sewers;

and to provide for variations in rate of flow and for a small amount of rain water, the board of sanitary engineers decided that trunk sewers should be constructed to carry 20 cubic feet of sewage per head per day when running half full.

The work accomplished to date upon the project consists in the following: Easby Point and F street intercepting sewer, 10,332 feet long, varying from 11 feet 3 inches to 4 feet 6 inches diameter. This sewer intercepts and discharges into the Potomac River near Easby Point sewerage and drainage, which formerly discharged into the B street sewer and Seventeenth street canal from the area north of F street between Seventh and Fifteenth streets and from the area north of D street between Seventeenth and Twenty-third streets. One thousand one hundred and thirty-five feet of this sewer was constructed upon pile foundation, and a short section, crossing an old creek bed with spongy bottom, was constructed upon a foundation of concrete masonry, in which was embedded two layers of old iron rails.

The sections in Fifteenth and F streets were constructed without material interference with traffic upon these busy streets, the materials being handled by means of a conveyor. To prevent complaints on account of mud and dust, and at the same time to permit a reasonable length of time to elapse for the consolidation of the trench back filling, a temporary plank flooring was laid over the sewer trench after it was back filled and it was maintained for several months, after which the asphalt carriage way was restored. The section of the Rock Creek and B street intercepting sewer between G and P streets, 5,650 feet long, 6-foot diameter, intercepts and discharges into the Potomac River near the foot of G street all sewage formerly discharged into Rock Creek by the main sewers of Georgetown, as well as that discharged into the same stream by the Washington sewers. This sewer was not constructed upon the lines selected by the board of sanitary engineers, which involved a large amount of tunnel work; instead, it was constructed along the east shore of Rock Creek and its length was thereby materially shortened. The only portion constructed in tunnel was under M street, a short distance east of the east abutment of the M Street Bridge. This portion of M street had been filled with ashes and other like materials and the filling so lacked coherence that it was considered prudent to support the 48-inch water main, which crossed the sewer line, by a pair of steel girders placed upon abutments resting upon solid rock.

The sewage from the Georgetown sewers is intercepted by a sewer in Twenty-seventh street, and discharges into an iron sewer in M street, by which it is conveyed across Rock Creek and is discharged into the Rock Creek intercepting sewer. The iron sewer crossing Rock Creek is supported by a truss placed between the abutments of the M Street Bridge.

The crossings of Slash Run and northeast boundary sewers involved reconstruction of sections of each, the intercepting sewer being carried above these sewers, which discharge storm water into Rock Creek. The sewage is diverted at points above the crossings and is conveyed by low-grade sewers to the intercepting sewer.

In addition to the above, 2,500 feet of the Rock Creek and B street intercepting sewer has been constructed from the intersection of Twenty-seventh and G streets toward its outlet, leaving for completion 3,400 feet of this line, upon which work is now in progress. This

sewer is intended to convey, upon completion of the project, all sewage from the Rock Creek and Slash Run systems and from the area drained by the Easby Point and F street intercepting sewer to the B street and New Jersey avenue trunk sewer.

Two thousand three hundred feet of the Tiber Creek and New Jersey avenue high-level intercepting sewer, between the south line of Garfield Park and the intersection of Canal and D streets, has been constructed, leaving for completion 6,284 feet of this line, upon which work is now in progress. This sewer is of D section, 14 feet by 14 feet 3 inches, and has a central cunette for dry-weather flow. Its object is to intercept the old Tiber sewer near the intersection of First and C streets NW., and, in addition, all sewers discharging from the eastward into the Tiber sewer between that point and Virginia avenue.

Incidental to the preparation of plans for the pumping station, borings over the proposed site and gaugings of sewage flow are in progress.

Upon the remaining portions of the project no work has been performed. The following is a brief description of each:

The Four-and-a-half street intercepting sewer will intercept drainage from the area of South Washington which now drains into the low district as far north as B street and as far east as Four-and-a-half street. Its outlet for storm water will be the Washington channel of the Potomac at M street.

The east side intercepting sewer (including the extension of Boundary sewer) will convey the sewage of the eastern section of the city (not including that portion tributary to the Tiber Creek system), and it will discharge into the B street and New Jersey avenue trunk sewer at M street.

The Water and M street intercepting sewer will intercept the sewage of South Washington now discharged into the Washington channel of the Potomac and the sewage of the James Creek Valley south of H street; it will intercept also, in its lower portion, all of the storm water from the low area between H and N streets; it will empty into the B street and New Jersey avenue trunk sewer at M street.

The B street and New Jersey avenue trunk sewer will receive all the storm water of the low district which may not be disposed of otherwise than by pumping; it will receive at its upper end the sewage conveyed by the Rock Creek and B street intercepting sewer, and near its lower end the sewage conveyed by the east side, the M street and the Tiber Creek and New Jersey avenue high-level intercepting sewers; in addition it will receive the sewage of the territory in which it is located, and will therefore deliver to the pumping station all the sewage of the city and the storm water of the low district.

The pumping station is to be located at the southerly end of New Jersey avenue, and will be provided with sand and screen hoists, high-duty pumps for lifting sewage, and low-duty pumps for lifting storm water.

At the pumping station the sewage will be discharged into the siphon chamber, from which it is proposed to construct an inverted siphon consisting of three lines of cast-iron pipes across the Anacostia River to Poplar Point.

The outfall sewer will skirt the river shore between Poplar Point and Magazine Point; it will be of horseshoe section, 9 feet 4 inches wide and 8 feet 4 inches high.

Automatic regulators will be provided at points of sewage interception and tidal gates will be placed at the outlet of the old sewers and of the intercepting trunk sewers.

This work was commenced in the year 1893. The amount expended to date and available is $772,000, and the amount required to complete the project is $3,257,635. At the rate of progress heretofore made, the completion of the work may be expected about the year 1925.

The general rules followed in the work of sewer construction in Washington may be of interest.

The earlier sewers were built with stone side walls upon plank flooring and covered with planking; other types were of D section with plank, stone, or brick bottoms, with stone side walls and brick arches; and others were brick sewers of circular section, commonly called "barrel sewers." Pipe sewers were introduced about the year 1870, and within the next succeeding four years more than 60 miles of sewers of this type were laid. After the change in the form of government of the District, in 1874, the engineer of the Board of Commissioners, Lieut. (now Maj.) R. L. Hoxie, was made aware of and corrected many defects of design and construction in the sewers more recently constructed, in progress, and in contemplation. The sizes were generally too small to take care of heavy rainfalls; the bottom of main sewers were of common brick masonry and were badly worn in cases where gradients were at all considerable. The forms given to the inverts were such that the sewage flow was not concentrated. The bedding, alignment, and jointing of pipe sewers were defective, and much inconvenience was caused by the intrusion of tree roots, which developed within the pipe sewers sufficiently to obstruct the sewage flow.

The sizes of proposed sewers were increased; intercepting sewers were constructed; the inverts of main sewers were designed of materials selected to resist abrasion and were shaped to concentrate the sewage flow; pipe sewers were designed with concrete cradles and concrete enveloping joints, and care was taken to secure good alignment. These general rules are at the foundation of the practice to-day.

The sewers of Washington (including the whole of the District of Columbia) are designed to carry storm water and sewage, with the exception of a few small suburban areas, where they are designed to convey sewage only. An empirical formula, which seems to fit local conditions, is used to determine the amount of drainage to be provided for.

The formula gives large unit rates for small areas, the rate decreasing as the area increases. The sizes are determined by the use of the Kutter formula, in which 0.013 is used as the coefficient of friction.

Sewers between 8 and 24 inches in diameter are made of stoneware pipes laid upon a cradle of concrete masonry, the joints being covered with a concrete enveloping band. Above 24 inches diameter they are made egg-shape until the 4 feet by 6 feet size is reached, which is the largest regular section. Sewers above that size are considered exceptional, and are designed with reference to the location and conditions.

In main-sewer work that portion of the sewer which is below the springing line is constructed of concrete masonry, lined with a wearing surface of vitrified-brick masonry from the bottom to a line midway between the bottom and the springing line. Above the vitrified-brick masonry the lining is of ordinary brickwork, the same thickness as

the vitrified-brick masonry. In sewers 4 by 6 feet and smaller, stoneware invert blocks are laid in addition to the lining of vitrified and ordinary brick masonry described above. In a few cases of sewers having light gradients, constructed in dry ground and designed to convey sewage only, unlined concrete sewer inverts have been constructed with satisfactory results. The arches of main sewers are constructed either of ordinary brick or concrete masonry, the selection being controlled by local conditions.

Concrete masonry, used in pipe-sewer work and elsewhere in walls less than 6 inches thick, is composed of beach pebbles (each particle of which must pass through a 1½-inch ring), mixed with an amount of mortar (composed of cement 1 part, sand 2 parts) which shall be 30 per cent in excess of the volume of voids in the gravel.

Concrete masonry in more massive construction is composed of broken stone (each fragment of which must pass through a 2-inch ring), gravel, and mortar. The amount of gravel used equals the volume of voids in the broken stone, and the amount of mortar is 30 per cent in excess of the volume of voids of the mixed stone and gravel.

A local inspector is provided for each section of work under contract. The general inspector makes daily visits to each piece of work in progress, and the assistant engineer in charge exercises supervision over all work under his direction.

Constructions exceeding $1,000 in cost are performed by contract. The work performed by day labor is limited to the smaller lines of pipe sewers and sewer appurtenances.

SOME POINTS ON THE THEORY AND PRACTICE OF ASPHALT MIXTURES.

[A. W. Dow, Inspector of Asphalt and Cements, District of Columbia.]

The testing or examination of asphalts for paving has been carried on in a more or less intelligent manner from the time of the laying of the first pavement with this material, and although our knowledge, which has been gained by slow stages, is yet very limited, still what we have now is such as to give us confidence in our predictions. I have no doubt that there are some here who are calling to mind cases where an asphalt has been pronounced suitable for paving and the pavement has proved an utter failure, and other cases where one asphalt has been pronounced superior to another and the pavement constructed with the inferior material has proved the better. Failures and paradoxes are the educators in all industries; the one gives us something that must be overcome, while the other gives us something to reason on. The asphalt paving industry is no exception to this rule, and I would be not far from right if I said it possessed to those who have not made a careful study of the subject more paradoxes than any other industry. And how often are they wrongly interpreted or put aside as being inexplainable, with the saying that there is too little known about the subject! Judging from the poor selections of materials and the slipshod methods employed in the manufacture and laying of pavements, it is very evident that the subject is not well understood in many cases. But there are failures traceable to carelessness and willful disregard of known characteristics of the materials used.

It is hard to understand why these should be made, unless it be that men become so convinced by their own arguments as to the remarkable good quality of their particular asphalt that they come to believe that, no matter how they abuse it, its good qualities will carry it through. I do not propose here to explain the cause of any particular failure, or to tell you directly how to avoid failures, but merely to present in as practical a way as possible the influence the selection of different ingredients has on the character of pavements in which they are used, and to discuss the theory of the cementing property of asphalts. In this way the cause of some of the failures will be made self-evident, and why poor pavements are often made with good asphalts.

I do not think I am wrong when I say that many engineers do not explain the phenomena met with in asphalt construction. This is because they do not apply the proper physical laws in their reasoning. And is this surprising, when we consider that the cementing and other materials in general use in engineering work are solids and involve the laws governing the cohesion and adhesion of solids for each other; while in the case of asphalt construction we have entirely different principles involved—those governing the attraction and adhesion of liquids for solids, for asphalt paving cements are in every sense of

the word liquids. This may be novel to some present, but an examination into their physical properties will demonstrate the correctness of this assertion.

Asphalt cements flow at all temperatures, the flow being quite marked at 75° F., and as the temperature is raised or lowered the flow becomes more rapid or sluggish, this change taking place to a different degree in different asphalt cements.

There are many everyday illustrations of the flow of these thick liquids, the commonest being the oozing through the smallest cracks in the barrels or boxes containing them. I have here some illustrations of this flow at three different temperatures, 26°, 75°, and 140° F. Possibly you will wonder why I have taken such a high temperature as 140°, but it is because I have found asphalt pavements to reach that high temperature on a hot day, and in the manufacture of a pavement the maximum as well as the minimum temperature to which it is subject should be considered in the examination of its ingredients.

The cement I have taken to illustrate the flow at the temperatures mentioned is one of our regular paving cements, such as is used in the wearing surface of an asphalt pavement. This first exhibit illustrates the flow of this cement in one week, having been kept at a temperature of 26° F. A 2-inch cube with a perfectly smooth, flat face was placed on this board directly over the hole; its flow into this hole, although not considerable, is sufficient to show that the cement is liquid at this temperature. This illustrates the flow of a similar cube placed in like manner on this board and kept at a temperature averaging 75° F. for three hours. Here is a third cube, similar to the others and treated in like manner, except that it was kept at 140° for one-half hour; at this temperature the flow was visible.

I have found that these thick liquids belong to the class of fluids that will rise in a capillary tube, thus showing their strong attraction for solid bodies. I believe that the laws of capillarity are the principal ones involved in the cementing in asphalt paving mixtures, and, when applied, will explain phenomena heretofore considered inexplicable. From the foregoing it is evident that asphalt cements may be looked upon as liquids, but there is another property possessed by them which must be considered that does not belong to liquids, as we commonly speak of them, and that is, they become brittle at certain temperatures. Asphalt cements, as I have before mentioned, become more sluggish or hard as their temperature is lowered, and at a certain hardness show evidence of brittleness, this brittleness increasing as their temperature lowers. It may be well here to explain that we can increase or diminish the softness of an asphalt cement at our will by the addition of a flux or harder asphalt. Thus we are able to obtain any degree of consistency. As asphalt cements become brittle at a certain hardness, and this increases as they harden, it is most desirable to have the cement as soft as possible, thus having the temperature at which it becomes brittle at the minimum degree.

The problem now to deal with is the selection of the sand. What sand which can be practically handled can be used with the softest possible asphalt cement and yet make a desirable pavement; that is, one that will not shove or mark too much under the traffic of the particular street upon which it is to be laid, on the hottest day. Such a mixture will be best able to resist the cold. Of what character must the sand be to fulfill this requirement?

From what has been said it is evident that asphalt mixtures are

sand grains of various sizes held together by the forces of attraction and adhesion of a liquid that we call asphalt cement. The idea of a liquid binding sand grains together is not as novel as one might imagine at first thought, and a very common example of this phenomena is exhibited by a sand beach which the tide has just left. We find here that the sand grains are held together so firmly by the limpid liquid water that a wagon may be driven on it and scarcely leave a mark. That this hardness is due to the presence of water in the voids of the sand is evident, for when the sand dries it becomes loose and easily displaced. I had a good opportunity at one time to illustrate by a wet sand why I preferred that particular sand for paving. When first appointed to my present position I took occasion to make a radical change in the grade of sand to be used in asphalt pavements. A gentleman connected with one of the paving companies and myself were watching the unloading of the first lot of the new sand. The sand was wet and cheesy, so to speak; that is, it could be cut out in big cakes; it did not look like a good mortar sand. My companion remarked that it was not what he would call a good sand, and asked me if I was not afraid I had made a mistake.

I called his attention to how much more strongly this sand, which was finer, was held together by water than the sand he had previously used, and explained that it would be held together proportionately stronger when asphalt cement occupied the voids. Practical experience has demonstrated the correctness of this choice of sand. That much can be learned from a sand when wet as to what value it will have for paving can be shown by comparing the two grades of sand just spoken of. On comparing these two sands when wet we find one, the finer, packs remarkably hard while the other packs but slightly.

Looking upon asphalt cements as liquids, we would expect to find an analogous result when paving mixtures are made with these two sands, using with each the same asphalt cement; that the mixture made with the finer sand would be harder than that made with the coarser. This is what we find in practice: while using a much softer asphalt cement with the finer sand than with the coarser equally hard mixtures are produced. The cause of this is explained by the fact that the voids in the finer sand are much the smaller in size, which means that the sand grains are closer together. It is a well-known fact that the smaller the space between two solid bodies that are held together by the attraction of a liquid between them the greater the adhesion. There are two grades of sand that have small voids; one that is composed of all very fine grains, and the other is a sand with the grains so graded from coarse to fine that the large voids are filled with the smaller grains and their voids in turn filled with still finer. The latter is the most desirable sand, for several reasons. Among them are: it is more easily handled in the manufacture of the pavement, and it requires less asphalt cement—not alone because the per cent void is less, but the total surface area of the sand grains is smaller.

I have also found that the shape of the grains has considerable influence on the hardness of the mixture. The more round and smooth the grains of sand, all other conditions being the same, the softer the asphalt pavement made therefrom. The great difference in pavements due to the use of different sands is not appreciated by many. It is not merely a theoretical difference, to be put aside as too trivial to be considered in practical work, for there is nothing responsible for more failures than the use of the wrong sand.

The difference in pavements due to the character of sand used can be well illustrated by practical instances. The pavements laid in this city in the summer of 1894 mark as much, and in some cases more, from traffic than do those laid here last year, and some of the former crack in cold weather. On comparing the records of these pavements the asphalt cement in the former is found to be 20 degrees of penetration harder than in the latter pavements, so that the difference must be due to the sand. An examination of the sands will show that they both have moderately sharp grains with the following mesh composition:

	1894 pavement.	1897 pavement.
Retained on 20 mesh per linear inch	4.5	2.5
Retained on 40 mesh per linear inch	40.0	21.0
Retained on 60 mesh per linear inch	32.0	35.0
Retained on 80 mesh per linear inch	9.5	8.5
Retained on 100 mesh per linear inch	6.0	10.0
Passing 100 mesh per linear inch	8.0	24.0

Another illustration of where a hard pavement contains a soft asphalt is the well known Neuchatel rock pavements that are used so extensively in Europe, and about which there is no question as to their wearing qualities. This pavement is a limestone powder cemented together by an asphalt so soft that its flow is perceptible at a temperature of 75° F., which is about three times softer than any asphalt cement used at present in our pavements.

My attention was first called to the importance of the shape and character of the sand grains a few years ago. I was required to make an examination of some paving materials for a Western city, and found that the asphalt cement was as hard as any we were using here. The sand was moderately fine, and, judging from past experience, I believed that a softer asphalt could be used with it. As the climate of this city was subject to a greater atmospheric range and much lower temperatures than Washington, I wrote advising the use of a softer asphalt cement. I was much surprised to hear in reply that they had commenced work on the pavement and that the pavement already laid was so soft that it would not be advisable to make it still softer. An investigation was immediately started to discover the cause of the softness. Nothing was found wrong until I examined the sand with a glass, when the grains were found so smooth and round that they resembled polished glass balls.

On further investigation in the laboratory it was found and proved conclusively that there was a decided difference in mixtures made with sand that was smooth and round and that which was angular. All else being the same, the mixture made with the smooth sand was much softer than that made with the angular sand. This hardness of paving mixtures made with the angular sand is undoubtedly due to the keying into each other of the irregular sand grains. Too sharp a sand—that is, one that would be so jagged as to be liable to have pieces broken off—is not desirable, nor, for that matter, is the use of any sand whose grains are liable to fracture.

As sand is 90 per cent of the pavement, why should it not be the most important ingredient to consider; and when a pavement is at fault, why should it not be more responsible than the asphalt which now bears the brunt of all failures?

A STREET-EXTENSION PLAN FOR THE ENTIRE DISTRICT OF COLUMBIA.

[By W. P. Richards, Assistant Engineer, District of Columbia.]

A street system executed far in advance of its actual needs is no novelty in the growth of modern cities. Philadelphia and New York at certain times have pushed their plans far into the future, and the present admirable plan of New York between First street and the Harlem was considered, when finished in 1806, as sufficient for three centuries of city growth. Many of our Western cities have in like manner extended their boundaries and streets before individual enterprises have placed a barrier in front of such efforts.

On the other hand, cities that have grown in a haphazard way have, at great expense, remodeled their plan or widened their streets, either for artistic effect or commercial needs. The infusion of new life in Paris during the reign of Napoleon III by radical changes in its ground plan is a well-known event. London has widened many of her thoroughfares for commercial purposes. Boston has spent millions to the same end, the great fire of 1872 affording opportunity to regulate some of the old highways in the heart of the city. New York, with her marvelous growth of recent years, has found it advisable to extend her street plan far beyond the Harlem River. The plan below Harlem that was deemed sufficient for three centuries was filled in less than one, and we find to-day, north of the city, a great unsymmetrical system of highways too well improved to allow radical changes and resulting in a makeshift plan in the Twenty-third and Twenty-fourth wards.

In the light of such events, and urged by its own experience, Washington has been impelled to extend its plan to the limits of the District. The total area covered by existing and proposed highways is 60 square miles. About 15 square miles are included in the settled portions of the District, leaving 45 square miles covered by a paper plan.

The origin, development, characteristics, and extent of the plan of Washington should be reviewed in order to appreciate the reason for general and specific features of the extended plan.

An act of Congress passed on the 19th day of July, 1790, established the permanent seat of government on the banks of the Potomac, and authorized President Washington to appoint three commissioners to have charge of the work connected with the foundation of the Federal city. The bounds of the District were marked by Andrew Ellicott in the spring of 1791, and Major L'Enfant, a French engineer, was directed by Washington to prepare a plan for the future city. L'Enfant came to this city in 1777, and served with distinction in the Revolutionary war. He had written to Washington during the agitation in Congress over the selection of a permanent seat, asking for "a share in the undertaking," and adding that—

> No nation, perhaps, had ever before the opportunity offered it of deliberately deciding on the spot where their capital city should be fixed; and, although the means now within the power of the country are not such as to pursue the design

to any great extent, it will be obvious that the plan should be drawn on such a scale as to leave room for that aggrandizement and embellishment which the increase of the wealth of the nation will permit it to pursue at any period however remote.

L'Enfant began his labors with unusual zeal, and both Washington and Jefferson took a great interest in the work. Jefferson sent to L'Enfant his collection of maps of the principal European cities, and expressed his opinion that none of them were comparable to the plan of old Babylon, revived and exemplified in Philadelphia. L'Enfant accepted this idea for his street plan, but the avenues were essentially a triangular system used at that time in parts of France, and applied more particularly to the treatment of great parks.

A map of the proposed city was finished in 1791 and laid by Washington before Congress, where its plan was greatly admired, but was criticised by some as being too extravagant, although Washington afterwards wrote of the plan as meeting with universal applause.

During the following year (1792) L'Enfant, on account of constant friction with the commissioners, retired from the field, taking all his manuscript with him. The authorities were for a little time in a dilemma, but Andrew Ellicott, who had assisted L'Enfant in his work, was able to draw up a similar plan, which was completed and engraved in October, 1792, and which is the plan of to-day.

L'Enfant's map has since been recovered and engraved, and the numerous notes and explanations upon it show the genius and enthusiasm of the man. He had the grandest conception of artistic development; he selected commanding points for great edifices, and planned for statues, columns, obelisks, fountains, parks, and public walks.

An outline of his plan is given on his map in three observations:

1. The positions for the grand edifices and grand squares were determined on the most advantageous ground, commanding the most extensive prospects.

2. Lines and avenues of direct communication were devised to connect the separate and most distant objects with the principal, and to preserve through the whole a reciprocity of sight.

3. North and south lines intersected by others running due east and west make the distribution of the city into streets and squares, etc.

Every grand avenue was made 160 feet wide; streets leading to the public buildings or markets were 130 feet wide; all others were 90 or 110 feet wide.

Some of the best artistic features conceived by this proud genius have never been developed, partly because they were located in marshes and low ground. This, it seems, was considered no obstacle, and an intense faith in the city's future prompted the following bit of speculation written on January 5, 1795, inscribed in a book in the surveyor's office, and designated as "Prophecy:"

The time will come when this wide waste of morass and thicket, open plain and wooded dell will resound with the busy hum of industry and be redolent with the glow of action and thrill of life. The swamps along the Tiber, teeming as they do now with all the varieties of animal and vegetable life, before the destructive march of man will gradually disappear, and art will erect its palaces over the ruins of nature.

This prophet had the good sense to place no time limit for the grand transformation, for although it has been literally fulfilled, action was deferred for more than half a century. From Washington to Grant's term the city was a "straggling village," the wide streets causing the scattered houses to appear as in great fields, and being named in derision "the city of magnificent distances."

Washington's new era dates from 1869, when Mayor S. J. Bowen began to narrow the roadways and improve the parking. At length, during Grant's Presidency, the genius, iron will, and commanding influence of Alexander R. Shepherd aroused the city to intense action, involving great expense and a marvelous change. Sewers were built, streets were put to proper grade, and trees planted all over the city. It was the polishing and setting of a gem. About $25,000,000 was spent in three years, but the change revealed the beauty and ingenuity of the city plan which Governor Shepherd admired so much.

The trees planted in their proper place along the curb intensified the vistas of the Capitol, public buildings, and statuary, as viewed down the well-graded avenues. The triangles and small parks scattered over the city broke the continuity of parallel buildings in a pleasing manner, and the circles standing in the center of main streets or avenues dispelled the monotony of straight lines and varied the lengths of vistas.

These improvements very soon engendered a rapid city growth. The boundary was approached, then passed by the overflow of population. Villas and subdivisions were well scattered over the District during the seventies, and a bunch of them grew in fantastic shapes adjacent to the northern boundary of the city, forming a marked contrast to the city plan. Each man had been allowed to locate streets over his land according to his own judgment, and a plat of the streets and lots was recorded in the office of the surveyor as an instrument of reference for deeds and surveys. At this stage it became apparent that a city extension system should be mapped out for the entire District.

In 1888 Congress declared that no more plans should be recorded unless made in conformity with the general plan of the city of Washington. This law was defective in not providing the way for the study and production of a general plan. It answered well near the city, but no one was wise enough to place his finger on any spot and say what the general plan should be.

This brings us to the inception of present extension work.

In March, 1893, an act was passed by Congress "to provide a permanent system of highways in that part of the District of Columbia lying outside of cities." It provided—

> That said system shall be made as nearly in conformity with the street plan of the city of Washington as the Commissioners may deem advisable and practicable.

The act created a commission composed of the Secretary of War, the Secretary of the Interior, and the Chief of Engineers of the United States Army, with authority for alteration and approval. Their final approval and the record of the plan in the office of the surveyor made it a fixed guide for future subdivisions.

The first study of a system under this act was coincident with the completion of a topographical map of the District made with a plane table by the United States Coast and Geodetic Survey. It was printed on sheets to a scale of 400 feet to the inch, with contour intervals of 5 feet each, each sheet covering 1 square mile. At first they were printed in four colors—streams in blue, contours in yellow, trees in green, and property line in black, but a reprint was made in black, leaving off the trees. They were complete, accurate, and acceptable, with one exception—the scale was unfortunate. Two hundred feet to the inch, or, better, 100 feet to the inch, is necessary for office work in grade studies.

To one not acquainted with Washington's environs a little attention to this map will reveal a section of remarkable topography. The city proper lies on a rolling ground from 10 to 100 feet above mean tide, and is surrounded by ridges and plateaus 300 or 400 feet above tide, which have been eroded by numerous streams into hollows and deep narrow valleys. Here was presented a problem in topographical conditions quite different from the city, where cuts and fills of 40 feet were rare. A close checkerboard plan over the suburbs, with maximum grades of 8 per cent, would in places double any cuts and fills in the city, while it covered a section five times as large and never so valuable. The promoters and friends of street extension who had urged its needs before Congress were wide in their views as to straight extensions, and were given a fair hearing by the District authorities.

The broad rules governing our final studies, which were generally acceptable, are:

1. That avenues should be extended with great directness to the District line, forming a fan-shaped system of highways to the city. This gives the essentials of a spider-web system.

2. That on account of its simplicity the checkerboard or gridiron system should be located wherever maximum grades of 6 per cent shall not be frequent or cause cuts and fills to exceed 20 feet.

3. That where direct extensions shall be of undulating grade curved highways are preferable, adding a picturesque feature to the system and relieving the monotony of straight lines.

4. That curves of small radii should be avoided, and in very broken sections of narrow ridges or valleys it is preferred to follow the sides rather than the top or bottom of the hill.

5. That the largest number of avenues should lead to or from the city, and cross avenues be infrequent and located on prominent ridges or on easy lines of communication.

6. That small parks and reservations which are such features of the city plan be eliminated from the extended system, and that large areas on prominent points of view be selected as parks and connected by avenues or curved drives.

It can not be predicted in what way or to what extent the suburbs may be developed, but the view has been held that the system should not be so burdensome as to check suburban improvement, remembering, too, that the plan is for the future more than for the present, and that a liberal policy should be expected in its development.

The field work made in aid of the studies was of a very simple character. A system of coordinate lines was extended over the District, permanently marked, and these connected with triangulation points of the Coast and Geodetic Survey and with the various subdivisions, numbering about 70, with an aggregate of 100 miles of streets. All subdivisions and points of reference were plotted on the sheets by means of their geographical positions, most of the existing highways governing to some extent the actual locations of the proposed streets.

In the office work the sheets on a scale of 400 feet to the inch were first used in drawing up a tentative plan, followed by a detailed study on scales of 1 inch to 200 feet and 1 inch to 100 feet. Many of the large scale sheets were enlarged from the Coast Survey by photography, and actual tests on the ground indicated satisfactory results with these enlargements.

The manner of conducting work in the office was for the assistants to submit independent studies, the best features contributing to a

combined plan, which was still further modified after public hearings before the District Commissioners and the highway commission.

To facilitate the work, as well as to comply with certain requirements of the law, the District was divided into four sections, differing so greatly in value of land or their relation to the city as to cause each section to be treated in an independent way.

Section 1 lies north of the city, is divided from section 2 by Soldiers' Home and North Capitol street extended, and from section 3 by Rock Creek Park. It is generally of a rolling nature, resembling the city in topography; is elevated from 100 to 300 feet above tide, and covers an area of 5,250 acres. A close copy has been made of the city plan, the streets taking 30 per cent of the area. No grades need exceed 5 per cent with proper developments.

Section 2 lies northeast of the city, with an elevation of from 10 to 300 feet, characterized by wide valleys and broken ridges that have been eroded into circular hills or knolls. A rectangular plan has been devised that is rather unsymmetrical, because of the artificial conditions arising from the railroad lines and old subdivisions. The section covers 5,570 acres, with 33 per cent in streets; maximum grades of 8 per cent and maximum cuts and fills of 20 feet. A circular drive has been devised to connect the highest points which may be used for park purposes.

Section 3 lies west of Rock Creek, comprises 7,114 acres of exceedingly broken country, from 100 to 400 feet above the Potomac. About one-half of this section has been covered by a checkerboard plan and the rest with a combination of curves and tangents approximately parallel to the ridges and valleys. Blocks 300 feet wide and 2,000 feet long are frequent in the rough localities, although blocks of 250 feet by 600 feet are considered an ideal size. Grades of 8 per cent with cuts and fills of 50 feet are frequent.

Section 4 comprises about 10,000 acres of land southeast of Anacostia River, with elevations of 10 to 300 feet. The section is so rough throughout that a curvilinear plan with varying sizes of blocks has been devised. The grades in this section will not exceed 10 per cent.

In preparing the maps for final approval, block distances, widths of streets and their relations to the coordinate lines, have been given. The establishment of grades or the marking of corners on the ground, as done in other cities, has not been followed here. This is left to the time when subdivisions shall be recorded, when the established grade will be guided by the tentative as near as good practice will allow.

After the outlines of so great a plan the question naturally arises, When will its development be complete, or will a population ever cover it? I will not offer any prophecy, but we can find some indications of what we may expect.

Curves of city population vary so much as to be very poor indications of what we may expect in the future; the curve of a country population is a better guide. It is found that Washington's curve of population agrees very closely with that of the United States, and that in fifty years we shall have more than 500,000, and close to 1,000,000 at the end of the next century.

To-day 250,000 occupy 15 square miles, and we may roughly conclude that the District in another century will be fairly well settled. The embellishment of its plan, of course, may be extended without end.

TREE PLANTING IN THE STREETS OF WASHINGTON.

[By William P. Richards, Assistant Engineer, District of Columbia.]

The selection, planting, and care of all trees in the streets of Washington is under the direction of the District authorities. Individual preferences or private enterprises are not allowed to regulate this improvement, as is generally done in other cities. Moreover, the city has its own nursery, where seeds planted from its own trees grow and supply all the needed varieties.

In 1871, during the era of great municipal improvements, Governor A. R. Shepherd appointed a commission to regulate this important matter, and their efforts have brought about the beauty and uniformity of shade existing in Washington to-day. This commission acted in an advisory capacity and served without pay, the first one appointed being unchanged for twenty-five years. Its members were Mr. William R. Smith, superintendent of the Botanical Gardens; Mr. William Saunders, superintendent of agricultural grounds, and Mr. John Saul, a local nurseryman. During the last thirteen years Mr. Trueman Lanham has acted as chief executive officer of the commission, or superintendent of parking.

Under the guidance of these men tree planting has never been at an experimental stage; but an undertaking so great has, of course, had its lessons of experience. The qualities of a good curbstone tree were set forth in the annual report of the commission in 1872, as follows:

First. A somewhat compact stateliness and symmetry of growth, as distinguished from a low-spreading or pendant form, so that the stem may reach a sufficient height to allow the free circulation of air below the branches.

Second. An ample supply of expansive foliage, of bright early spring verdure, and rich in the variety of colors and tints assumed during autumn.

Third. Healthiness, so far as being exempt from constitutional diseases as well as by maladies frequently engendered by peculiarities of soil and atmospheric impurities.

Fourth. Cleanliness, characterized by a persistency of foliage during the summer, freedom from fading flowers, and exemption from the attacks of noxious insects.

Fifth. It should be easily transplanted, of moderately vigorous growth, and not inclined to throw up shoots from the roots or lower portions of the stem. A tree of extremely rapid growth is generally short lived.

Sixth. The branches should be elastic rather than brittle, that they may withstand heavy storms; and lastly, there should be no offensive odors from foliage or flowers.

Of course, no tree planted amid the artificial conditions found in a city will fill such rigid requirements. This report of 1872 recommended as best the silver maple (*Acer dasycarpum*), the American linden (*Tilia Americana*), and European sycamore maple (*Acer pseudo-platanus*). The American elm (*Ulmus Americana*) was thought to fill all the requirements when not subjected to the attacks of insects. The tulip tree (*Liviodendron tulipifera*), sugar maple (*Acer saccharium*), sweet gum (*Liquidamber straciflua*), and the red

maple (*Acer rubrum*) were named as the most beautiful of trees, their only drawback being that of not growing freely after transplanting. The Norway maple (*Acer plataniodes*), the negundo (*Acer negundo*), and the American ash (*Fraxinus Americana*) were recommended for certain places. For wide avenues the buttonwoods (*Platanus occidentalis* and *Platanus orientalis*) were considered rapid-growing and effective trees.

Of late years some varieties have been planted that are not mentioned in the above, and others, once common, have been pronounced as poor street trees.

Washington was a city of young trees during the seventies, and in the spring of 1873 more than 6,000 trees were planted, consisting of silver maples, Norway maples, American elms, American and European lindens, sugar maples, tulip trees, American white ash, scarlet maples, various poplars, and ash-leaved maples.

From 1880 to 1888 the caterpillars were extremely numerous in the city and opportunity was had for observing which trees were mostly a prey to them. It was found that the white poplar and the negundo or ash-leaved maple were the first to be attacked, and next the lindens, elms, and sycamores (or western planes), and white ash. Those mostly exempt were the Carolina poplars, the sugar, silver and Norway maples, the tulip tree, and honey locusts.

A careful count was made of the trees in 1887, and by comparing this with the number of trees since planted and those removed there is found to be more than 78,000 trees, which if placed 30 feet apart would line both sides of a boulevard between Washington and New York. These consist of more than 30 varieties, but seven-eighths of the number may be placed in less than 12 varieties. The number, location, and peculiarities of the principal trees may be best described separately.

The silver maple (*Acer dasycarpum*) numbers about 25,000, or nearly four times any other variety. It is almost a perfect street tree, as it stands transplanting well, is a quite rapid grower, and has beautiful foliage, which is never too heavy to allow free circulation of air. It loves moisture, but nevertheless stands seasons of drought better than may others. It can not attain at the curbstone the magnificent proportions that it has in the park or field, and must be trimmed at times very severely. It is seldom attacked by the caterpillar, but some years ago a scale appeared on the trees that caused serious thoughts of their removal. This has since disappeared, and the trees are in a healthy condition. It taught the lesson, however, that it is well not to have most trees of one variety. The most recent plantings of the silver maple may be seen on S street, and good examples of severe trimming on Third street NW., and on T street NW., from Third to Fifth streets.

The Norway maple (*Acer platanoides*) numbers about 5,000 trees, and it is unfortunate that more of them were not planted in past years. They require considerable care in transplanting and are a little too thick in foliage. They are handsome in leaves and form and are of strong fiber, so that they withstand storms well. Insects seldom trouble them. Two splendid rows of them may be seen on Eighth street NW., above G street; on Sixteenth street NW., above H street, and on Thirteenth street NW., above K street.

The American elm (*Ulmus Americana*) numbers about 5,000 trees, planted on various avenues. It is a tree of spreading form, so that on roadways 50 feet wide its limbs arch the entire space. From this

it is liable to be split by storms. It presents a magnificent appearance at certain times of the year, but the elm-leaf beetle has preyed so constantly on this tree that it is either doomed to disappear as a street tree or else be limited to a small number. New Jersey, New York, New Hampshire, and Rhode Island avenues are planted with this tree.

The buttonwood, sycamore, or plane tree (*Plantanus orientalis* and *occidentalis*) number 5,000 trees. It is a tree of large growth, and must be closely trimmed as a street tree. The western plane is not an altogether handsome tree, its shedding of bark giving its trunk an ugly appearance, which is objected to by many. As a shade producer it has no fault. The eastern plane is its superior in many respects, and it seems unfortunate that its merits were not recognized sooner. Its size and nature make it better fitted for avenues than the narrower streets. Its foliage is splendid in appearance and of proper thickness. It is free of insects. If the elms were replaced, in part at least, by this tree, much would be added in way of ornament to the city. Good examples of the western planes may be found on Eleventh street NW., and Tenth street NE. The eastern plane is best seen on Indiana avenue and at the Peace Monument. A magnificent specimen stands on the center of Lincoln square, on East Capitol street.

The American linden (*Tilia Americana*) numbers 5,000. Most of them are on Massachusetts avenue, which has four rows, nearly 4 miles in length. In early summer they are at their best, when their flowers fill the street with their fragrance. They need ample space and are apt to suffer much from the drought. They seem to have been planted too close in this city, and have grown very little in late years.

The tulip tree (*Liriodendron tulipifera*) numbers nearly 2,000. It can hardly be considered a good curbstone tree, as it requires good conditions for its development. It is fine in appearance and does well on wide parkings, as on Sixteenth street, which it occupies jointly with Norway maples, the latter along the curb.

The Carolina poplar (*Populus monilifera*) numbers about 6,000, and was probably planted on account of its rapid growth. It is a good curbstone tree in many respects—is assertive, free of insects, and is of good foliage. Its bad qualities are, brittle limbs, which are always broken by storms, and a persistency of root growth that is fatal to sidewalks. Money considerations have doomed them, and they are being replaced with more desirable trees.

The aspen poplar (*Populus alba*) and ash-leaved maple (*Acer negundo*), numbering about 2,000, although of good foliage, have been condemned as street trees on account of their liability to attacks of insects.

The ginkgo or maidenhair tree, although few in number here, has been found to be a good curbstone tree. The pin oak, planted in the parking on East Pennsylvania avenue, has shown itself an ideal tree for an avenue or wide-parked street.

The catalpa, along the same avenue, will be removed in the near future. Horse chestnut trees have grown with some little success on Thirteenth street NW., but can not be called a good street tree.

The sugar maple, although a queen among trees, needs too good care for an ideal street tree. No success has been had in this city with it, although it may be said that attempts have not been persistent. A fine specimen stands in the parking northwest of Thomas circle.

The red oak planted on Twelfth street, where it is surrounded by good conditions, has been a great success.

If required to arrange a list of the trees in this city in the order of their merit, and in the light of what has been here shown, I should place the silver maple, Norway maple, and eastern plane side by side in the first rank. Then the ginkgo and western plane, and last those that require extra care and are well fitted for wide parkings—the American linden, the oak, and sugar maple.

The planting and care of trees in Washington grows from year to year, and the future will probably demand more skill and judgment than in years past. About $20,000 is spent annually, most of it in the care of old trees. From 1,000 to 3,000 young trees are planted during the spring and fall of each year. The nursery has several thousand of the best varieties ready for planting. After two or three years as seedlings and four or five years in the nursery rows, they are taken up, with no dirt to their roots, and placed on the streets in holes from which four or five cart loads of original soil have been removed. They are then filled about with suitable earth, and a box placed around for protection. These boxes are 7 feet in height, 16 inches square at the bottom, and 10 inches at the top, built of strips 1 by 3 inches. They are held by four stakes driven into the ground, on each side in a slanting direction, and nailed to the box. Leather straps are nailed to the top of the box and passed around the tree, to prevent any injury to the bark or rubbing in windy weather. These boxes are not an ornament to the street, but are an absolute necessity for the protection of young trees. After the tree has gained sufficient strength, the box is removed and a wire netting 6 feet long is fastened around the tree. It costs about 35 cents per tree, and some 40,000 trees are protected in this way.

The proper distance to space trees depends on the locality and variety. Too close planting was done during the first year of the commission, the distance along the curb being from 20 to 25 feet. From 30 to 45 feet is now considered a better limit.

The trimming of trees is a bone of contention among authorities, as to time, manner, and extent. It is certain, however, that some city trees must be trimmed, and trimmed severely, if they are expected to last long.

This outline is presented as a study of the history of this enterprise and some personal observations of late years. The experience of twenty-five years has not resulted in a unanimity of opinion in the commission itself, as evidenced by a report signed by the three members, one of whom had this reservation: "Approved as to facts, but not as to opinion."

I therefore beg to offer these facts and opinions, leaving to others the privilege of making their own selection.

O

55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 39.

REGION SOUTH OF AND ADJOINING YELLOWSTONE NATIONAL PARK.

LETTER

FROM

THE SECRETARY OF THE INTERIOR,

TRANSMITTING,

IN RESPONSE TO RESOLUTION OF THE SENATE OF DECEMBER 6, 1898, COPY OF A REPORT FROM THE DIRECTOR OF THE GEOLOGICAL SURVEY, GIVING DETAILED INFORMATION TOUCHING THE REGION SOUTH OF AND ADJOINING THE YELLOWSTONE NATIONAL PARK, AND ALSO EXCERPTS FROM THE REPORT OF THE SECRETARY OF THE INTERIOR FOR THE FISCAL YEAR ENDED JUNE 30, 1898, UNDER THE HEAD OF THE YELLOWSTONE NATIONAL PARK, RELATIVE TO THE REGION IN QUESTION.

DECEMBER 20, 1898.—Referred to the Committee on Forest Reservations and the Protection of Game and ordered to be printed.

DEPARTMENT OF THE INTERIOR,
Washington, December 16, 1898.

SIR: I am in receipt of Senate resolution of the 6th instant—

That the Secretary of the Interior be, and is hereby, directed to send to the Senate all the information in the possession of his Department in relation to the region south of and adjoining the Yellowstone National Park; also what steps should be taken to preserve the game in the park, and whether the region south of the park should not be put under the same control as the national park, in order to prevent the extinction of the herds of large game roaming therein.

In response thereto I have the honor to transmit herewith a copy of a report from the Director of the Geological Survey, giving detailed information touching the region south of and adjoining the Yellowstone National Park, together with excerpts from the report of the Secretary of the Interior for the fiscal year ended June 30, 1898, under the head of Yellowstone National Park, relative to the region in question, and of Gifford Pinchot, upon the examination of the forest reserves (Teton Forest Reserve, p. 109), as well as from the report made to the Department May 1, 1897, by the forest committee of the National Academy of Sciences.

In regard to so much of the resolution as inquires what steps should be taken to preserve the game in the park, it may be stated that the existing law, act of May 7, 1894 (28 Stats., p. 73), for the protection of game in the Yellowstone National Park is being as rigidly enforced as the limited force (military patrol and civil scouts) at the command of the acting superintendent of the park will permit.

To afford better protection for the game therein increased appropriations for the protection and improvement of the park are needed, to the end that additional civil scouts may be employed to apprehend poachers and other depredators upon the game.

Regarding so much of the resolution as inquires whether the region south of and adjoining the Yellowstone National Park should not be put under the same control as the national park in order to prevent the extinction of the herds of wild game roaming therein, I have this to say: That region is a part of and within the jurisdiction of the State of Wyoming. The control of wild game therein falls within the exclusive jurisdiction of the State and will remain within its exclusive jurisdiction unless that region is made a part of the Yellowstone National Park by an extension of the boundaries of the latter. That such extension can be had so as to embrace this region within the exclusive jurisdiction of the United States is shown by the following reservation of authority contained in the act of July 10, 1890 (26 Stats., 222), admitting the State of Wyoming into the Union:

> *Provided*, That nothing in this act contained shall repeal or affect any act of Congress relating to the Yellowstone National Park, or the reservation of the park as now defined, or as may be hereafter defined or extended, or the power of the United States over it; and nothing contained in this act shall interfere with the right and ownership of the United States in said park and reservation as it now is or may hereafter be defined or extended by law; but exclusive legislation, in all cases whatsoever, shall be exercised by the United States, which shall have exclusive control and jurisdiction over the same; but nothing in this proviso contained shall be construed to prevent the service within said park of civil and criminal process lawfully issued by the authority of said State: * * *

While the title to most, if not all, of the land in the region south of and adjoining the park is in the United States, it must be remembered that the ownership of the wild game found within the limits of a State rests in the State, as has been determined by several decisions of the Supreme Court of the United States, among which is the case of Ward *v.* Race Horse (163 U. S., 504). By the Constitution Congress is authorized to "make all needful rules and regulations respecting the territory or other property belonging to the United States," and in the exercise of this authority can regulate the disposal and use of the public lands whether situate within or without a State.

While Congress may not be able to authorize the capture or killing of game, the ownership of which is in a State, it is believed that it can prescribe how and when the public lands may be used and can restrict or altogether deny access to or entrance upon the public lands, or any of them, for the purpose of pursuing or hunting game. It seems, therefore, that there are two ways in which the General Government can effectively take action tending to preserve wild game which roams over the region south of and adjoining the park. The first of these is to include this region within the Yellowstone National Park by an extension of its boundaries, pursuant to the reservation of authority made in the act admitting the State of Wyoming into the Union; and the second is to prohibit anyone from entering or being upon the public lands in that region for the purpose of pursuing or hunting wild game.

The lands in question have heretofore been set aside by a Presidential proclamation under the act of March 3, 1891, as a forest reservation, and under the act of June 4, 1897 (30 Stat., 35), the Secretary of the Interior is authorized "to regulate their occupancy and use, and to preserve the forests therein from destruction." It has recently (November 17, 1898) been ruled by the Attorney-General that persons violating these regulations are amenable to the laws of the United States and can be punished therefor, but whether the regulations which the Secretary of the Interior is thus authorized to make are confined to those which in their nature tend to preserve and avoid destruction of the forests, and whether hunting within such reservations is injurious to the forests or tends to their destruction, are questions which have not been considered. It may, therefore, be doubtful whether, under existing legislation, the Secretary of the Interior is clothed with sufficient authority to make regulations prohibiting the pursuing or hunting of game within the region named. Thus far no attempt has been made to make such a regulation.

In the administration of this forest reservation assistance can of course be indirectly given to the State in the enforcement of its game laws, and to that end the forest superintendents, supervisors, and rangers will be instructed as a part of their duty to not only look after the preservation of the forests and their protection from fire and other depredations, but also to cooperate in every reasonable way with the State authorities in preventing the violation in the reservation of the game laws of the State.

There is also transmitted herewith, for consideration in connection with this report, a map, prepared in the office of the Director of the Geological Survey, showing the Yellowstone National Park and the abutting timber reserves, also the land entries made in the vicinity of Jacksons Lake in the Teton Forest Reserve and in the country south of the latter reservation, together with copies of the report of the acting superintendent of the Yellowstone National Park for the fiscal year ending June 30, 1898, and of the opinion of the Attorney-General dated November 17, 1898.

Very respectfully,

THOS. RYAN,
Acting Secretary.

The PRESIDENT OF THE SENATE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
Washington, D. C., December 12, 1898.

SIR: I have the honor to acknowledge the receipt, by reference from the Department, of a copy of a Senate resolution adopted December 6, 1898, calling for information in relation to the region south of and adjoining the Yellowstone National Park, the resolution being in the following words:

Resolved, That the Secretary of the Interior be, and is hereby, directed to send to the Senate all the information in the possession of his Department in relation to the region south of and adjoining the Yellowstone National Park; also what steps should be taken to preserve the game in the park, and whether the region south of the park should not be put under the same control as the national park, in order to prevent the extinction of the herds of wild game roaming therein.

In conformity with the instructions contained in your indorsement, I have the honor to submit the accompanying report in duplicate.

I am, with respect,

CHAS. D. WALCOTT, *Director.*

The SECRETARY OF THE INTERIOR.

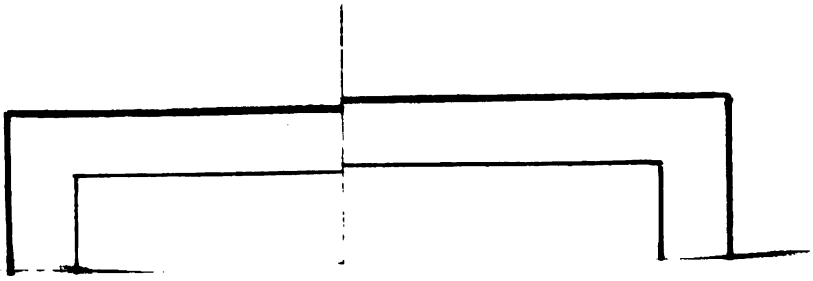
REPORT ON THE REGION SOUTH OF AND ADJOINING THE YELLOWSTONE NATIONAL PARK, WITH ESPECIAL REFERENCE TO THE PRESERVATION AND PROTECTION OF THE FORESTS AND THE GAME THEREIN.

In accordance with the instructions of the honorable the Secretary of the Interior, I visited, during the field season of 1898, the Teton Forest Reserve, and also examined the country lying to the south of that reservation. In making the examination the valley of Jackson Lake and the Snake River were followed to the Lower Gros Ventre Butte, and an ascent was made of the northern portion of the Teton Range, the Gros Ventre Range below Jackson post-office, and the higher ridges in the eastern portion of the reservation south of Buffalo River. From several main peaks practically the whole of the reservation was seen.

The Teton Reserve includes the northern portion of the Teton Range, the valley of Jackson Lake, and the mountain ranges about the head waters of Buffalo River and north of Gros Ventre River. There is very little commercial timber within this area, owing to the fact that it has been in the past persistently burned by the Indians. All over the region young pines are springing up, and in a few years there will be a heavy forest growth over a large portion, provided fires are kept out of it. At the west foot of the Teton Range, in the western portion of the reserve, there is a small area of valley land of considerable elevation—7,000 to 8,000 feet—and in the interior of the reserve is a large valley about Jackson Lake, also greatly elevated, its elevation ranging from 6,000 to 7,000 feet. The great elevation of these areas renders them of little value for agricultural purposes, since nothing but the hardiest vegetables can be cultivated successfully, and the areas valuable for hay are limited.

Recommendations.—I would not recommend that any part of the present reserve be taken from it, unless it be a little of the valley land on the western border. Even this, under the present law, can be settled upon and taken from the reserve upon proof of its agricultural character. The same is true of the valley land in the vicinity of Black Tail Butte, on the southern edge of the reserve.

The extension of the reserve to the south is very desirable, both in order to secure natural fire limits and to provide a winter range for the elk, antelope, and deer which have their summer range in the Yellowstone National Park. Much of the region lying to the south of the reserve is mountainous, covered with a scanty growth of timber, but capable of supporting a heavy forest growth if protected from fire. The only agricultural land within a distance of 18 miles south of the present limits of the reserve is in the valley of Snake River, the Little Gros Ventre River, and the main tributaries entering into it from the east, where there is sometimes an acre or two of agricultural land. The same is true of the valley of Gros Ventre River, where there is some agricultural land for a distance of 3 miles along the east base of Black



Tail or Upper Gros Ventre Butte. This is of essentially the same character as the hay lands of the lower portion of the Buffalo River Valley.

I have examined the reports of the agents sent to investigate the distribution of the forests of the Teton Reserve, and recommend that, if the region is to be kept as a forest reserve, the present eastern boundary of the Teton Reserve be extended south to the south line of township 39, and that its south line be the south boundary of township 39, running westward as far as the southwest corner of township 39, range 117 west. I also recommend that the following fractional townships, 43 and 44 north, range 118 west, be withdrawn from the Teton Reserve and restored to the public domain.

If a Teton national park is to be established I recommend that it include all of the present Teton Forest Reserve with the exception of fractional townships 43 and 44 north, in range 118 west, and that portion of the Yellowstone Timber Land Reserve lying south of the Yellowstone National Park, and also the following-described area lying south of the Teton Forest Reserve: Townships 39, 40, 41, and 42 north, in ranges 110, 111, 112, 113, and 114 west.

If such additions are made to the park it would be absolutely necessary that a strong, durable wire fence be constructed to run from the base of the Teton Range on the west to the canyon of the Gros Ventre River on the east, a distance of 18 miles, in order to prevent the game from following down the Snake River Valley into the settled districts in the Jackson Hole country.

Protection of game.—At present the game is protected in the Yellowstone National Park, and a perfect summer range is provided for it. But as winter approaches the elk, deer, moose, and antelope seek a winter range at a lower altitude or they perish. Some of the animals work off to the northeast corner of the park and winter there, but the greater number descend to the south to the Jackson Lake Basin and, along to the hills and mountains to the east of the lake. Later in the fall and early in the winter heavy snow gradually drives the game south down the Snake River Valley and the mountain slopes to the east and west.

Formerly many of the elk and deer ranged as far down as 30 or 40 miles south of the Gros Ventre Butte, but with the settlement and fencing in of the bottom land, the cropping of grasses and pasturing of cattle and sheep, their winter pasture has been gradually crowded to the northward. Now, it is only a question of a few years before the winter range will all have been taken, and the game will have followed the buffalo and other large game of Colorado and other sections of the Rockies and the Sierra and Coast ranges and become extinct.

The Government is now brought face to face with the question, Shall it protect the winter range of the game which it has, at large annual expense, protected in its summer range in the Yellowstone Park? It owns and controls most of the lands of the winter range. Will it continue in this control, or will it give the lands up to the pasturage of cattle and sheep and thus exterminate the game? In September and October of the present year parties were camped on nearly every creek in the large region south of the park, waiting to shoot down the game, which they can freely do under the game laws of Wyoming, which license the hunting of large game three months each fall. Will the Government prevent the shooting of game within the Yellowstone Timber Reserve and the Teton Forest Reserve? If it does not, the rifle and shotgun will as surely exterminate the game as will the destruction of their winter pasture.

Annexation of the region south of the Yellowstone National Park to that park.—The area south of the park, extending as far as Black Tail Butte, or the southern limit of the present Teton Reserve, should either be added to the Yellowstone National Park or constituted as a separate park, to be known as the Teton National Park.

I have personally visited most of the points and regions in the United States noted for their scenery, but in my judgment there is nothing that excels in natural beauty the valley of Jackson Lake and the Teton Mountains. The Tetons are unequaled except in the higher, almost inaccessible points of the Sierra and Cascade mountains, and Jackson Lake is a beautiful sheet of water lying directly at their base. It may be more truly called the Switzerland of America than can any other spot known to me. If it were practicable to obtain railroad facilities to the foot of Jackson Lake and thus enable the tourist to see that beautiful region and then go north by stage to the Yellowstone Lake and through the park it would be the grandest trip, for one of limited extent, to be found anywhere in the world.

Settlers.—The question of the rights of settlers that are always to be found within the Teton Reserve and the region to the south can probably be adjusted under the present law, through the General Land Office, without injustice to these settlers. If not, the action of Congress can be invoked, inasmuch as the preservation of the wonderful scenery of this country and the great natural forest areas is a subject of importance to the American people.

The accompanying map shows the boundaries of the Yellowstone National Park, the Yellowstone Park Timberland Reserve, the Teton Forest Reserve, and the region lying to the south of the Teton Reserve.

Following is a report on the Teton Reserve prepared by Mr. Henry Gannett, geographer in charge of the investigation of the forests that are included within the forest reserves.

TETON RESERVE.

[By Henry Gannett, geographer, from notes by Dr. T. S. Brandegee.]

LIMITS.

This reserve is situated in western Wyoming. Its limits, as defined by Executive order of February 22, 1897, are as follows:

Beginning at the southeast corner of township 43 north, range 110 west, sixth principal meridian, Wyoming; thence northerly along the surveyed and unsurveyed range line between ranges 109 and 110 west, to the point of intersection with the south boundary of the Yellowstone National Park Timber Land Reserve, as established by proclamation of September 10, 1891; thence westerly along said boundary to its intersection with the boundary line between the States of Wyoming and Idaho; thence southerly along said State boundary line to the point for the unsurveyed township line between townships 42 and 43 north; thence easterly along the unsurveyed and surveyed township line between townships 42 and 43 north, to the southeast corner of township 43 north, range 110 west, the place of beginning.

In brief, its limits are, on the east, the range line between ranges 109 and 110; on the north, the parallel of 44° north latitude; on the west, the west boundary of Wyoming; and on the south, the south boundary of township 43 north, range 110 west. The area herein included is estimated at 1,300 square miles, or 829,440 acres.

This area has been mapped by the Hayden survey and the United States Geological Survey on a scale of 4 miles to the inch, a scale too small for the representation of details of topography or forest characteristics, but sufficiently large for the presentation of the broader facts of distribution.

The forest conditions of this reserve were examined by Dr. T. S. Brandegee, the well-known botanist of San Diego, Cal. He devoted nearly three months to the examination of this reserve and that portion of the Yellowstone Reserve lying south of Yellowstone Park. This report has been prepared from notes furnished by him.

TOPOGRAPHY.

The principal relief features are simple. Traversing the reserve from north to south, near its western boundary, is the Teton Range, descending rather steeply to the west into the valley of Pierre River, the eastern portion of which is included within the reserve. On the east the mountains descend by a precipitous wall to a broad valley, Jackson Hole, which also traverses the reserve from north to south. East of Jackson Hole the land rises in great, broad mountain spurs to the Wind River Range, whose summit is beyond the limits of the reserve on the east. The area is drained by Snake River and its tributaries southward and westward.

The Teton Range has an average breadth of 12 to 15 miles, and extends northward and southward beyond the limits of the reserve. Its greatest altitude is in the well-known summit, the Grand Teton, which rears its head far above its fellows to an altitude of 13,870 feet. The average altitude of the range probably does not exceed 12,000 feet. The mountains are extremely rugged and rise high above timber line, which is here at an altitude of about 10,000 feet. The only practicable pass in the range is Teton Pass, with an altitude of 8,464 feet. The range has been deeply eroded by glaciers, as well as by water, and there are still in existence several small glaciers occupying little basins high up in the range.

From the crest the range descends on the west quite steeply to the valley known as Teton Basin. The western boundary of the reserve includes a considerable area of this valley, but as the range trends slightly to the westward the strip of valley land diminishes in width southward, so that at the south boundary of the reserve the west line crosses the foothills of the range. The altitude of the valley within the reserve lines ranges from 6,500 to 7,000 feet, an altitude which in this latitude is prohibitive of profitable cultivation except of the hardiest crops, such as potatoes, oats, hay, etc. This valley portion is watered and drained by streams flowing westward to Pierre River from the mountains.

On the east the Teton Range descends by cliffs and slopes of the most rugged character to the valley known as Jackson Hole. This is a broad expanse, extending from the north boundary of the reserve in a direction a little west of south to the southern limit. It has a breadth ranging from 10 to 20 miles, while its altitude within the reserve ranges from 6,500 to 7,000 feet, which, as in the case of Teton Basin, indicates a climate too rigorous for any but the most limited agriculture.

Snake River enters this valley on the north and shortly flows into Jackson Lake, a large body of water 10 miles long by an average of 3 miles in breadth. The river leaves the lake at its southeast angle, and flows at first northeastward, then southeastward, and finally southwestward down the valley, receiving on its way, among other streams,

Buffalo and Gros Ventre rivers from the east and a number of small streams from the west. At the east base of the mountains there is a succession of smaller lakes, among them Lee and Jenny lakes, which are connected and from which flows Lake Creek to the Snake and farther south Taggart and Phelps lakes.

The surface of the valley is, in the main, a gravelly bench land, level and producing a scanty growth of sagebrush, interspersed with a little grass. This bench land terminates with low bluffs, inclosing the bottom lands of the river. These are broad, and through them the river has a very winding course. These bottom lands are covered with a forest of cottonwood and willows, with a dense undergrowth. The river has a great volume at all stages of water, is remarkably uniform in its flow, owing to the existence of a natural reservoir—Jackson Lake—and has a fall amply sufficient to bring the water up to the higher portions of the bench land. Indeed, were it not for the severity of the climate this would form a valuable agricultural region, as there is an abundance of water for irrigation throughout its entire extent.

The northernmost affluent of Snake River from the east is Buffalo River. This stream heads in high, volcanic plateaus east of the reserve, which forms the northward extension of Wind River Range. Its general course is westerly to its junction with the Snake. It is a rapid stream, and flows, through most of its course, in a narrow valley.

North of Buffalo River most of the country is rolling and undulating, not greatly elevated above the level of the river; but it contains numerous isolated fragments of a high plateau about the heads of the streams, many portions of which have been eroded away, and these fragments appear as isolated hills and mesas.

South of Buffalo River, between it and the Gros Ventre, is a high, broad spur stretching westward from the summits to the east. The highest point in this spur is not far from its western end and is known as Mount Leidy, which has an altitude of 11,177 feet. This broad spur or mountain mass is drained mainly southward by the tributaries of Gros Ventre River, the streams flowing to Buffalo River being comparatively short.

Gros Ventre River also heads in the high volcanic plateau and flows with a generally westerly course to its junction with Snake River.

CLIMATE.

So far as I am aware, no observations of rainfall have been made within this area. There is every indication, however, that the rainfall upon the Teton Range and upon the mountain spurs east of Jackson Hole is heavy, especially upon the west slopes of the former range. The existence of glaciers is in itself an indication of a heavy precipitation. The streams flowing from these ranges are large in proportion to their drainage basins, which is another indication of copious rainfall.

In Jackson Hole and Teton Basin, on the other hand, the rainfall is deficient, being inadequate for the needs of agriculture. What little farming is done in these valleys requires irrigation, except in a few localities where the soil is naturally supplied with water by percolation from the streams.

No observations for temperature, so far as I am aware, have been made within this region; but that it is cold—almost subarctic—in temperature may be inferred from the altitude and latitude. The lower portions of the reserve are at an elevation of 6,500 feet, and from that the habitable portions range up to 8,000 feet. The experience of the

limited agricultural operations which have been carried on has been sufficient to show, as stated above, that only the hardiest garden vegetables, grains, and forage plants can be cultivated.

AGRICULTURAL LANDS.

As stated above, the west boundary includes a small area in the upper higher part of Teton Basin. This is a triangular tract widest at the north, where it may be 6 miles wide, and diminishing southward to a point. Nearly all of townships 44 and 43 north, range 118 west, are included within this tract. Although elevated and cold, and therefore capable of producing only the hardiest crops, this land is susceptible of irrigation.

Jackson Hole comprises a large amount of agricultural land. It is well situated for irrigation and the supply of water is ample for the entire area. The altitude is, however, great, and the consequent severity of the climate prevents the production of anything but the hardiest vegetables and grains. The value of the land for agriculture, therefore, is not great. The area included in this basin, which may be taken out of the reserve on the ground of its greater value for agriculture than for the production of timber, is as follows:

Range 113 west, township 46 north, three western tiers of sections; township 45 north, south half; range 114 west, townships 46, 45, 44 (north half) north; range 115 west, townships 46, 45, 44, 43 (west half) north; range 116 west, township 44 north, two eastern tiers of sections; township 43 north, east half.

Access to the valley is not easy. From Teton Basin, on the west, a wagon road has been built over Teton Pass, 8,484 feet, over which the mail is carried. This constitutes the principal means of access. From the north end of the valley a trail runs up into Yellowstone Park, and another westward around the north end of Teton Range into Falls River Basin. From the east connection is had with Wind River Valley via Union Pass, at an altitude of 9,516 feet, and Gros Ventre Pass, at an altitude of 9,852 feet, and Buffalo River. From the head of Green River Basin a trail leads to Snake River, at the foot of Jackson Hole, via canyon of Hoback River. The canyon of Snake River at the foot of Jackson Hole is impassable.

GEOLOGY.

The geologic features of this region are very complicated. The entire geologic series is represented, together with a variety of metamorphic rocks and volcanic rocks of all ages.

Teton Range is a monocline, faulted on the east and dipping westward. The body of the range is composed of metamorphic granite. Stratified beds which originally overlaid this have in great part been removed; but upon the summits of certain of the westward spurs patches of Silurian still remain. Lower down Silurian beds lie up against the range continuously from the south end northward for three-fourths the length of the range. Still lower down upon the mountain flank Carboniferous beds overlie Silurian beds, and near the south end of the range Jura Trias beds succeed them. Just above the edge of the valley of Teton River a low, narrow belt of basalt covers the whole breadth of the valley and extends on the north up to the granite upon the range, covering all the stratified beds. At the north end of the range the stratified beds curve around over the granite, showing a suc-

cession of Silurian and Carboniferous beds. The central portions of Teton Basin are floored with Quaternary deposits to a great depth.

Jackson Hole occupies the bed of the fault and is, like most of Teton Basin, filled to a great depth with quarternary deposits. In the southern portion are two groups of buttes known, respectively, as Upper and Lower Gros Ventre buttes. The former exposes rocks of Silurian, Carboniferous, and Tertiary ages, while the latter, with a volcanic nucleus, exposes stratified beds of the same ages.

East of Snake River the central geological phenomenon is the elevation of the Gros Ventre range. This is a short range trending northwest and southeast, separating the Gros Ventre and Hoback rivers. It lies, therefore, entirely south of the reserve. This is a short, anticlinal uplift, with a nucleus of granite, and with stratified beds dipping away from it to the northeast, to the southwest, and to the southeast around the end of the range. The succession of the rocks to the northeast shows first a narrow outcrop of Silurian beds, then a broad outcrop of Carboniferous rocks, along the edge of which flows the Gros Ventre River through a part of its course. Succeeding this is an equally broad outcrop of Jura-Trias, whose margin is followed by Gros Ventre River through another part of its course. Succeeding this to the northeast are Cretaceous and Tertiary beds, of which the great mountain spur separating Buffalo River from the Gros Ventre is composed. The other portions of this spur are formed by Tertiary beds.

The country about the head of Gros Ventre and Buffalo rivers is capped by an outflow of volcanic rock lying directly on top of the Tertiary beds, thus protecting them from erosion.

FORESTS.

Although with the exception of Jackson Hole and the other small valley areas above described, and the mountain areas which are above timber line, or are too rugged for timber growth, this region is one in which climatic conditions favor forest growth, yet it contains but little forest. Only a fraction of its area, probably not more than one-fourth, is covered with trees, and most of these are young, small, and of species of little value for lumber. It is only occasionally that tracts of timber of merchantable size are found, and areas containing notable quantities of merchantable forest are few and limited.

This condition appears to be due simply and solely to fires which have swept over the country so completely and persistently that scarcely any part has been entirely exempt from them, while nearly all portions have been burned again and again within a generation. A large proportion of the area has been burned so persistently and frequently that the forests have ceased, temporarily at least, to attempt to restore themselves, and these regions are now grass-covered parks. Indeed, the forest conditions in this reserve closely resemble in all respects those of the Bighorn Mountains. Some areas have been repeatedly burned, so that *Pinus murrayana*, or lodgepole pine, the most abundant conifer, seems to have been driven out. Such areas will naturally become covered with aspen in time, for aspen seeds can be carried great distances by the wind, while lodgepole pine seeds can not spread far from the parent tree except by the aid of birds, squirrels, rats, etc. Under present conditions the tree-bearing regions as a whole decrease, while the aspen areas increase at the expense of those now producing conifers. With few exceptions, young trees are springing up over the recently burned districts, and in most places are

abundant. The young growth of lodgepole pine is usually very dense, and even impassable.

The timber of merchantable size and quality is, for the most part, scattered over the reserve in small groves or individual trees, in such wise that except in a few localities it could not be cut economically. These few localities are specified in the detailed descriptions which follow. Altogether they are estimated to contain 22,180 acres, or about the equivalent of a township. Thus, only about 3 per cent of the area of the reserve is covered by merchantable timber in anything like compact bodies. These areas are estimated to contain about 75,000,000 feet B. M.

The entire area of the reserve is approximately 1,300 square miles. Of this, 300 square miles are without timber, because of great altitude or the rugged character of the country, 250 square miles of this being rugged portions of the Teton Range, and the remainder is comprised in the elevated summits of the volcanic plateau on the eastern border of the reserve. In the Teton Basin there is an area of about 25 square miles within the reserve, which is naturally timberless, and in Jackson Hole there is a similar area of 150 square miles. These two areas probably never will produce timber because of deficient rainfall.

In addition to these are the areas of Jackson and other lakes, estimated to comprise 41 square miles. There is thus altogether an area of 515 square miles, or 40 per cent of the entire area of the reserve, which is not only without timber at present, but is, in all probability, incapable of supporting a timber growth. Of the remaining 785 square miles, all of which is believed to be capable of producing timber, only 38 per cent at present has a growth of timber upon it, and only 3.5 per cent of the latter area contains timber of merchantable size and quantity. These areas of merchantable timber, which, as stated above, comprise in all the equivalent of about one township, contain an estimated amount of 75,000,000 feet B. M. of timber. If the entire area of 875 square miles were timbered as heavily as are these few areas, the reserve would contain about 1,000,000,000 feet instead of 75,000,000. The difference between these two figures represents the destruction by fire.

SPECIES OF TIMBER.

The timber trees found on this reserve are: *Pinus murrayana*, which forms the bulk of the forest; Aspens, next in abundance, and *Picea engelmanni*, *Abies subalpina*, *Pinus flexilis*, and finally the cottonwoods. Their relative abundance and distribution are shown below.

Pinus murrayana (*Lodgepole pine*).—This comprises four-fifths of the coniferæ. It is here a small tree, rarely 2 feet in diameter and 75 feet high. When growing alone a tree commonly bears limbs low down upon the trunk, but in a forest, and growing close together, it may have a clear trunk for 30 feet. It covers large areas to the exclusion of all other trees, and then its trunk is rarely more than 8 to 12 inches in diameter, although 50 to 75 feet high. It grows from the lowest elevation to 8,000 or even 9,000 feet, but is more plentiful at the lowest and middle elevations. The dead dry logs of these trees furnish material for the log houses and fences of the inhabitants. The larger ones are culled out by the sawmills and known as "bird's-eye" pine. The boards made from it are white and full of knots.

Picea engelmanni (*Engelmann spruce*).—The habitat of this tree is along streams between elevations of 7,000 to 10,000 feet. It is in some places abundant, and seems to furnish most of the logs for the sawmills.

A large tree may be 3 feet in diameter and 125 feet high. Its habitat and situation on damp soil often prevent its destruction by fire.

Pseudotsuga taxifolia (red fir).—This is nowhere very abundant. It grows usually on dry ridges, and since much of it survives the fires it is probably relatively more abundant than if the rest of the forest had not been destroyed. It is especially prominent on the west side of the Teton Range, above Lee Creek. The largest trees are 3 feet in diameter and more than 100 feet high. It is not sufficiently abundant to be of any value as a timber tree.

Populus tremuloides.—The aspen, after *P. murrayana*, is the most common tree. It grows from the lowest elevation to 8,000 or 9,000 feet. It is commonly small, rarely growing 2 feet in diameter and 50 feet high. It is especially abundant at the lower elevations along the edge of the coniferæ.

Populus augustifolia (*aspen*).—This tree grows only along the streams in the valleys. It is abundant along Snake River, Spread Creek, and Pacific Creek, and is found also on the streams west of the Teton Range. The trees grow to 3 or 4 feet in diameter and 75 feet high. These cottonwoods are used for fencing on the west side, where it is difficult to get *P. murrayana.* Following the streams, it extends farther than the coniferæ into the agricultural areas.

Populus trichocarpa (*cottonwood*).—This is not common. It is usually found with *P. augustifolia.* A few trees grow along Spread Creek, more about Jenny and Taggart lakes and on the western side of the Teton Range.

Juniperus communis (*juniper*).—This juniper is very uncommon; only a bush seen now and then, perhaps two dozen altogether.

Juniperus virginiana (*red juniper*).—Very little of this tree is found. About Miners Ferry some posts of it have been used.

Pinus flexilis.—This species grows in exposed situations and rarely covers any area. There are some good-sized forests south from Togwotee Pass. It is usually common near the timber-line region, along the summit of ridges, and sometimes a solitary tree grows out on the plains. It is not used for lumber because of its inaccessible habitat and its short trunk.

Abies subalpina.—This is most abundant about the timber line on northern slopes, and sometimes follows the streams down to the lowest elevations. The largest trees are 2 or 3 feet in diameter and 100 feet high, but it is considered worthless for lumber. The bark is thin, and the tree is thus easily killed by fire, but as it generally grows in moist situations much escapes burning.

UNDERGROWTH.

Pinus murrayana woods never have a very heavy undergrowth, and it is often entirely wanting. There is little humus in these forests. The most abundant vegetation growing under *P. murrayana* is "pine grass," a grass not relished by stock. In moist situations lonicera is common, with ribes, shepherdia, etc. Two or three species of shrubby artemisia are very abundant in almost every place where there is no forest; but in the forest there is usually very little undergrowth of shrubs. The most abundant is vaccinium of two or three species in the subalpine and middle elevations. Eleagnus is abundant along the stream banks of the lower elevations. Among the herbaceous plants that are valuable for pasturage or for hay, and are abundant, geranium, balsamorrhiga, and helianthella are the most important.

Ceanothus velutinus is common east of Jackson Lake, north of Pacific Creek, on the east slope of the Teton Range, and west of the range. This bush is at times conspicuous on areas burned several years previous. *Sphaeralcea acerifolia*, a showy malvaceous shrub, soon appears in a burned district with epilobium, etc.

DETAILED DESCRIPTION.

The reserve includes townships 43 to 46, inclusive, in ranges 110 to 118, inclusive; in all, 36 entire or fractional townships. In only a small part of the reserve have the township lines been run. The following description applies, in the main, to townships as hereafter to be laid out:

Township 46 north, range 110 west.—This township lies close to the high mountain divide separating the waters of Wind River from those of the Snake. It is composed of high, rugged, plateau-like mountain spurs, between which are the heads of streams flowing to Buffalo River. The altitude ranges from 8,000 to 11,000 feet. There is very little timber, and that is on the lower slopes of the valleys of the streams, the summits of the ridges and plateau being bare.

Township 46 north, range 111 west.—The eastern part of this township is made up of spurs from the Snake-Wind River Divide, between which flow in high valleys branches of Buffalo River. The western portion is comparatively low, undulating country, in which is the valley of the North Fork of Buffalo River. The altitude ranges from 7,500 feet up to 10,000. The timber is scattering. The undulating country of the western portion is covered by groves alternating with parks. Upon the lower slopes of the high mountain ridges there is scattering timber. The ridge rising in the southeastern portion of the township is well covered with forests.

Township 46 north, range 112 west.—The country is high and rolling, with an average altitude of about 8,000 feet, and is drained by the waters of Pacific Creek and those of Buffalo River. The slopes to Pacific Creek in the northern part of the township are fairly well timbered, while upon the drainage to Buffalo River, which occupies the southern two-thirds of the township, timber is scattering, occurring only in groves upon the north slopes, and contains much dead timber. There are two small recent burns in the north edge of the township.

Township 46 north, range 113 west.—Pacific Creek flows southwest across this township and drains the entire area. The surface presents no great relief, excepting a high, abrupt hill on the eastern edge and quite high bluffs along the creek. The altitude ranges from 7,000 to 9,000 feet. A large part of this township, perhaps one-third of it, has recently been burned. This burned area is east of Pacific Creek. The slopes on the south side of the creek are fairly well timbered, and timber occurs in patches elsewhere. In the southwestern part of the township there is much quaking aspen and cottonwood, mingled with young pines, in the valley of the creek. The northwestern part of the township contains scattered groves of young conifers, with much dead timber standing or fallen.

Township 46 north, range 114 west.—This township also is made up of rolling and broken country, disposed rather irregularly, and is in the main drained by a small creek flowing directly into Jackson Lake. Most of its area is devoid of timber. Some quaking aspen groves are found in the southern part and along the creek, while in the northwestern part are areas of small conifers. Three small recent burns have occurred in the northwestern portion of the township.

Township 46 north, range 115 west.—This township contains the northern portion of Jackson Lake. The country generally is level, having an elevation of approximately 7,000 feet. Snake River enters the northwestern portion of the township and flows southward into the head of the lake. On its eastern bank is a strip of open valley country, perhaps a mile in width and 2 miles in length north and south. This is a fine meadow, from which many tons of hay were cut in 1877 and many more might have been cut. The soil is damp from seepage from the river, so that no irrigation is needed for the production of hay. On the west bank the river is bordered by a belt of cottonwoods. East of the lake is a mixture of pines and aspens, mainly the former, which in the northeastern part of the township becomes somewhat dense, but is entirely composed of young trees. Among them are two or three small recent burns. On the west shore of the lake is a fairly heavy growth of pines, extending from the shore back to the foot of the mountains and running up into the gulches in places for a mile or two. This area, which extends westward into range 116, contains a body of merchantable timber of more than 2,000 feet to the acre, over an area of nearly seven sections.

Township 46 north, range 116 west.—Nearly all of this township is occupied by the high, rugged Teton Range, and is entirely devoid of timber, owing to the combined effects of altitude and ruggedness. Along its eastern edge, however, the belt of timber fringing Jackson Lake extends over into this township for a mile or two near the northern line.

Township 46 north, range 117 west.—This township is occupied by the Teton Range. With the exception of the northwestern quarter, it is barren. There is a strip of timber upon the western edge consisting of young pines, with some red fir and scattered aspens. This area of timber, which extends into the next township westward and southwestward is one of the largest in the reserve.

Township 46 north, range 118 west.—This township contains the west slope of the Teton Range. It consists of long spurs and narrow valleys running westward. The body of timber covering this township, the western portion of township 46, range 117, and the northern portion of township 45, range 118, is composed mainly of young lodgepole pines of various ages and sizes from 10 feet high upward. Its distribution depends upon the topography. Innumerable small gulches and depressions run from the mountains westward. On their northern slopes and in the bottoms there is an impassable second growth of pine, with more or less fallen dead timber. Young aspens grow about the edges and on the northern slopes. On these slopes, also, there are often large red firs. These trees, however, are in many other places very large in proportion to other trees of the locality, because they are not killed easily by fire, and may therefore have survived several generations of aspens and *Pinus murrayana*. In some localities in this area patches of good-sized *Pinus murrayana* and also aspens are seen, but the trees of this species are mainly young and so dense that the region is impassable in a north and south direction. A part of this area, comprising nearly eleven sections, is estimated to contain over 2,000 feet of standing timber to the acre of merchantable size and quality.

Township 45 north, range 110 west.—This township presents high relief, being composed of the deep valleys of the head branches of Buffalo River, between which are high plateau-like spurs. The sides

of these spurs are partially covered with forests, while the summits and upper portions of the slopes are bare.

Township 45 north, range 111 west.—This township is traversed from east to west by the narrow valley of Buffalo River, and from its north boundary nearly to its south boundary by the valley of the North Fork of that river. The southern part of the township is composed of a mountain spur, separating Buffalo from Black Rock Creek, while north of Buffalo River on the east of its North Fork is another high spur. These spurs reach altitudes of 11,000 feet, and, as the valley of Buffalo River is 7,400 feet, the range of altitude in this township exceeds 3,500 feet. North of Buffalo River and west of its North Fork the country is undulating, with but slight relief.

The spur south of Buffalo River is fairly well timbered upon its north face, in small areas across its summit, and down the southern face. This timber is of commercial size and will cut over 2,000 feet per acre over an area equivalent to two sections. In the western part of the township upon this spur is a burn, covering some four or five square miles. Much of the dead timber is still standing and is mainly Engelmann's fir. This is among the largest of this species seen upon the reserve, and if not burned would have been among the largest seen upon the reserve, many trees being 2 feet in diameter and 100 feet high. If not killed by fire this would have been one of the most valuable bodies of timber seen.

On the southern slope of the spur north of Buffalo River and east of its North Fork there is quite a body of timber, covering perhaps three-fourths of the surface. Around on the west end of this spur the timber becomes much more scattering, only a small fraction of the surface being covered by it. On the north slopes again the timber becomes close, while the top of the spur is entirely bare. West of the North Fork the undulating country contains only scattered groves of timber.

Township 45 north, range 112 west.—This township is traversed by Buffalo River from east to west in a valley from 1 to 2 miles in width. South of it this valley is separated from that of Black Rock Creek by a low, flat ridge rising 600 or 800 feet above the valley. Near the center of the township Box Creek enters Buffalo River. On the north and east of this creek the country is undulating, presenting a slight relief. West of it is a high symmetrical hill lying partly in this township and partly in township 45 north, range 113 west, whose summit is about 2,500 feet above the valley, or 9,500 feet above the sea.

The immediate valley of Buffalo River is treeless. The low, flat ridge separating it from Black Rock Creek is in part covered by scattering groves and in part by a burn of some 4 or 5 square miles. Within this township, as noted in describing township 45 north, range 111 west, this burn is covered with standing and fallen *Pinus engelmanni* of merchantable size. North of Buffalo River and east of Black Rock Creek the undulating country is covered by scattered groves, mainly of young trees. The hill lying west of this creek is covered by a scattering growth of aspens, young pines, and a few red firs, with a large amount of standing and fallen dead timber.

Township 45 north, range 113 west.—This township is traversed from east to west by Buffalo River, which crosses it near its southern border in a valley from 1 to 2 miles in width. Were it not for the elevation, this valley would be valuable agricultural land. On the east line of the township Black Rock Creek enters Buffalo River, and near the junction is located one of the few ranches in the reserve. The soil of the valley is largely coarse gravel, in which the river has cut many courses. On

the south of the valley there is a low bluff on which are scattered groves of aspen, and on the north the country rises into hills. On the east side of the township the country rises to a height of 9,500 feet above the sea. The slopes are covered with aspen groves and a scattered growth of young pines, with a few old red firs. Among this young growth many dead pines are still standing, while the ground is covered with others which have fallen. Upon the western side of the township is a second hill, rising about 2,500 feet above the valley. On this there are a few scattered groves of pine, but most of the slopes of this hill, with the flat country north of it, have been recently burned. The summit is entirely devoid of timber.

Township 45 north, range 114 west.—In the western portion of this township is the outlet of Jackson Lake. Snake River flows at first eastward with a very crooked course to the junction of Pacific Creek, where it turns southward. The township also contains the lower courses of Pacific Creek and Buffalo River. The surface presents very little relief. It is mostly low, rising but slightly above the level of the lake, the shores of which, as well as the banks of Snake River just below the lake, are marshy. Most of the northwestern part of the township in the neighborhood of the lake is covered with willows. An agricultural area extends into the next township west and has a fine deep soil, free from gravel. If cleared of brush it would become a fine hay meadow. There are at present two ranches upon it. The remaining country west of Pacific Creek is largely open, with a few scattering groves of pine and aspen. Between the mouths of Pacific Creek and Buffalo River on the lower hill slopes are also groves of aspen and pine, and on the slopes of the ridge south of Buffalo River are also groves of aspen.

Township 45 north, range 115 west.—This township contains the southern portion of Jackson Lake. The land is level and raised but little above the lake. The northeastern portion of the east shore of Jackson Lake is covered with scattered groves of pine and aspen and farther eastward with willows and grass. The eastern shores of the lake, comprised in the southern part of the township, are covered with a scattered growth of young pines. This region has been so frequently burned, down to the present time, that in the eastern part the pine seems to have difficulty in reproducing itself. In the western part, however, it is coming up very densely, so that, with the thickets of young pines and the network of fallen dead timber, the region is almost impassable. Here also many red firs are found, which appear to have survived a succession of fires. In the northwest, at the base of Teton Range, is a small area of heavy timber.

Township 45 north, range 116 west.—This township is comprised almost entirely in the Teton Range. In the eastern part there is included a portion of the west shores of Jackson Lake, which are timbered up to the foot of the steep mountains.

Township 45 north, range 117 west.—This township is entirely comprised in the Teton Range and contains almost no timber, except near the western borders, where a scattering growth begins to come in.

Township 45 north, range 118 west.—This township is situated at the west foot of the Teton Range, where the steep slopes flatten down into Teton Basin, and contains the southern portion of the largest continuous body of timber in the reserve. The timber is young lodge-pole pine, with more or less fallen dead timber, and here and there scattered through the young forests are old red firs. In the southern part of this township the timber becomes much more scattering, and the

pines are largely replaced by groves of aspen. A small, narrow burn traverses this township up the north slopes of the spur to the region north of Lee Creek.

Township 44 north, range 110 west.—The northeastern half of this township consists of an elevated plateau, about 11,000 feet above the sea, considerably above the limit of timber. This elevated table-land descends by a cliff 1,000 or more feet in height to a valley running northwest and southeast, in which heads Black Rock Creek on one side and a stream flowing to Wind River on the other. The summit in the valley between these two streams is Togwotee Pass, which has an elevation of 9,400 feet. Most of this valley, which is between 1 and 2 miles in width, is well timbered. The southwestern portion of the township is occupied by a group of hills rising to an altitude of about 11,000 feet. The slopes of these hills, up to an altitude of 10,000 feet, are also well timbered with pine of merchantable size, bearing over 2,000 feet to the acre, over an area of 2½ sections.

Township 44 north, range 111 west.—The northeastern part of this township is crossed by Black Rock Creek in a broad valley nearly 2 miles in width. On the northeast are the slopes of the high plateau noted in the description of township 44 north, range 110 west, which are here covered with a light scattering growth of conifers. The valley itself is a succession of high mountain meadows with no trees except willows. On the southeast the land rises into irregular hills, which separate the waters of Black Rock Creek from those of Gros Ventre River. These support scattering groves of conifers, which are estimated to cover from one-half to two-thirds of the surface of the western part of the township, with a number of small burns, which altogether aggregate a number of square miles.

Township 44 north, range 112 west.—This township is crossed from east to west by Elkhorn Creek, on either side of which rise broken, irregular hills, separating it on the north from the waters of Black Rock Creek and on the south from those of Gros Ventre River. The township is covered with groves of conifers interspersed with open areas, the timber covering from one-half to two-thirds of the surface. The trees are all young, and among them is much dead standing timber, while the ground is thickly covered with fallen trees. There are two burns of considerable importance—one about 3 miles in length by 1 mile in width, lying along the north bank of Elkhorn Creek, and the other south of that stream, comprising, perhaps, 2 square miles.

Township 44 north, range 113 west.—The south line of this township passes over the summit of Mount Leidy. From the group of hills, of which this is the principal summit, the land falls northward to the canyon of Elkhorn Creek, then rises again in low hills, separating the latter from the waters of Buffalo River. The Mount Leidy group of hills is timbered with conifers up to an altitude of about 10,000 feet. These are quite heavy on the north slopes, averaging over 2,000 feet per acre over an area equivalent to four sections in this and the adjoining township on the west. North of Elkhorn Creek the high portion of the hills contains groves of conifers, covering, perhaps, one-half of the surface, while at the lower altitudes the timber changes into aspen groves.

Township 44 north, range 114 west.—The southern portion of this township consists of the north slopes of high hills separating the Snake from Gros Ventre rivers, and descending to the valley of the former stream. These northern slopes are covered quite densely by young lodge-pole pines 15 to 20 feet in height, while in the southeast the trees

reach merchantable size. The lower ground at the base of these slopes contains scattered groves of aspen, while the northern portion of the township includes the immediate valley and bottom lands of Snake River, and is open, with the exception of a belt immediately along Snake River covered with cottonwoods and willows.

Township 44 north, range 115 west.—This township is practically comprised in the valley of Jackson Hole. It is crossed by Snake River flowing southwest in a broad bottom land which is timbered with cottonwoods and willows over an area perhaps a mile in width. On the northwest is a broad bench of gravelly soil covered with sagebrush. On the northern edge is a small body of young pines interspersed with areas of recent burns.

Township 44 north, range 116 west.—The eastern third of this township is comprised of the level expanse of Jackson Hole and includes Jenny Lake and part of Leigh Lake, which are glacial lakes, lying at the immediate foot of the Teton Range. The western two thirds of the township are composed of high and rugged spurs of the range. The Grand Teton, the crowning summit, is in the southwest corner of the township. The eastern edge of the township is open and covered with a sparse growth of sage. The shores of Jenny Lake are timbered, the timber extending in a scattering way up the spurs and the gorge of a creek flowing into the lake. The most of the timber on Leigh Lake has been burned. The mountainous portion of the township is almost entirely devoid of timber, being too rugged and too high for a forest growth.

Township 44 north, range 117 west.—This township is entirely comprised in the Teton Range, and contains very little timber. This little is in the form of groves of pine scattered over the lower portions of the west half of the township.

Township 44 north, range 118 west.—This township comprises the lower slopes of the Teton Range and extends into Teton Basin. The east half contains a little pine timber, mainly in scattering groves, but in the canyons of Lee and Teton creeks, especially on the south side of the latter, are small bodies of good timber, averaging over 5,000 feet to the acre. In each of these canyons there is a sawmill established, which is engaged in utilizing the timber. The western half of the township, which is comparatively level, is covered in the upper part by aspen groves and in the lower part is open and covered with grass. This area of open country, which extends south over the western half of township 43, range 118, is all good agricultural land and all "claimed" by persons most of whom live upon their ranches. Some ranches have fine berry gardens. The land is all easily irrigable from the mountain streams. The main crops are potatoes and turnips. Oats and barley can also be raised. The money-making industry, however, is cattle raising, with the production of butter, etc. The soil is fine, deep, and free from gravel. The nearer the foothills the finer and better the soil.

Township 43 north, range 110 west.—This township comprises high hills or mountains rising to an altitude of 10,000 feet at the heads of branches of Wind River and the Gros Ventre. One-third to one-half is timbered with groves of conifers, alternating with open parks.

Township 43 north, range 111 west.—This township is made up of southward slopes from the divide between Black Rock Creek and Gros Ventre River and the valley of a tributary to the latter stream. The slopes are sparsely timbered with groves of conifers. The valley of the tributary is open, while immediately south of it, in the southern part of the township, the country is covered with aspen groves.

Township 43 north, range 112 west.—Across this township, from west to east, flows a branch of Gros Ventre River, while north and south of it hills rise to altitudes of nearly 10,000 feet. The township is sparsely timbered, perhaps one-third of the area being covered with groves of conifers interspersed with much dead timber. The living trees are young and small and there are numerous small burns, especially in the western part of the township.

Township 43 north, range 113 west.—This township is drained southward by Gros Ventre River, which flows in a broad, open, timberless valley. Southeast of its valley are low hills with a few groves of conifers, while the northwest two-thirds of the township are composed of hills rising westward to altitudes of 9,500 feet and northward to the summit of Mount Leidy, on the north township line. These hills are sparsely covered with groves of conifers, about one-fourth of the area being wooded and the remainder parks.

Township 43 north, range 114 west.—This township is made up of the southward slope of the hills which separate Buffalo from Gros Ventre rivers. It is sparsely covered with scattered groves of conifers, covering perhaps one-fourth of the area, the remainder being open parks.

Township 43 north, range 115 west.—The eastern part of this township is hilly, being the eastern slopes of the spur separating Buffalo and Snake rivers from the Gros Ventre. These spurs are sparsely covered with groves of aspen and a few conifers on the lower parts. The remainder of the township consists of the open valley of Jackson Hole. The Snake River flows across the northwest part of the township in a broad bottom land timbered with cottonwoods and willows. Upper Gros Ventre Butte rises from the middle of the valley upon the southwest corner of the township. This butte, rising to an altitude of 1,000 feet above the valley, is pretty well timbered at the northern end, while the greater part is covered with scattered groves of conifers. The valley is floored with good soil, 3 to 5 feet deep, mostly free from gravel, and easily irrigated from Dutch Creek. All the water was taken from this creek this year by settlers.

Township 43 north, range 116 west.—The eastern two-thirds of this township lies in Jackson Hole. It is level, and across the southeast corner flows Snake River in a broad bottom land covered with cottonwoods and willows. Back of this, on each side, is a belt of gravelly land covered with a sparse growth of sage. Succeeding this on the west is a broad belt 2 miles in width of fairly good timber. Some of this, over an area estimated at 2 square miles, contains over 2,000 feet per acre. The western third of the township comprises the cliffs of the eastern descent of the Teton Range. It contains very little timber, and that of scrubby character, consisting of the few conifers that find a footing among the rocks.

Township 43 north, range 117 west.—This township is entirely comprised in one of the most rugged portions of the Teton Range. It is without timber, except in the few scattering trees in the southeast corner and a small body in the canyon of Darby Creek, in the southwest corner.

Township 43 north, range 118 west.—This township comprises the lower slopes of the Teton Range and the eastern border of Teton Basin. Most of the area is timbered, but upon the canyon walls of the creeks are scattered groves of conifers, and upon Darby Creek, in the southern part of the township, is a small but valuable body of timber, averaging over 5,000 feet per acre, for the utilization of which a sawmill has been established near the foot of the canyon. The western portion of the township is level, open, and covered with sage.

With this tier of townships the reservation, as established by the order of President Cleveland of February 27, 1897, ends. Examination was made, however, of the three tiers of townships lying farther south, and the description will be extended to include these townships.

Township 42 north, range 110 west.—This township is composed of high hills on the northeast side of Gros Ventre River, the summits of which have altitudes exceeding 10,000 feet. The eastern half of the township is from one-half to three-fourths covered with coniferous timber and the west half with scattered groves of aspens, covering perhaps one-third of its surface.

Township 42 north, range 111 west.—This township is crossed from southeast to northwest by Gros Ventre River, flowing in a narrow valley, while in the northwestern part it is crossed by a creek which enters the Gros Ventre near the western boundary of the township. South of the Gros Ventre the hills which border its valley are covered with small groves of conifers, changing into aspen in the valley. North of the river the hills are covered with scattered groves of conifers, changing into aspen in the northern and eastern portion of the township.

Township 42 north, range 112 west.—This township is crossed by Gros Ventre River flowing first southwest and then northwest. Its valley is from 1 to 2 miles in width and is covered with cottonwoods and willows. South of the river there is very little timber except in the southwest corner, which contains scattered groves of conifers. On the northern side the land rises gradually and is almost barren of timber, the lower slopes containing a little aspen, while higher up are scattered groves of coniferous trees.

Township 42 north, range 113 west.—This township is crossed by Gros Ventre River in a broad and almost barren valley. The hills to the north are entirely treeless, with the exception of an area of 1 or 2 square miles in the northwest corner of the township. South of the river the land rises gradually into hills, the lower slopes of which are almost treeless, but higher up there is a dense growth of coniferous trees, which, over an area of 2 sections in this township, average 2,000 feet or more per acre. The summit of the hills is treeless.

Township 42 north, range 114 west.—This township also is crossed by Gros Ventre River, flowing a little north of east in a rather narrow valley. North of the stream there is practically no timber. South the hills rise abruptly to a high summit of 11,000 feet. These slopes are very well timbered; over an area of 4 sections it is estimated that the timber exceeds 2,000 feet per acre, although some of this has been recently burned.

Township 42 north, range 115 west.—This is crossed by the Gros Ventre, flowing somewhat south of west in a valley which at first is narrow and then opens out into Jackson Hole. The southeastern part of this township is mountainous, forming the western end of the spur separating Gros Ventre River from little Gros Ventre Creek. The higher portions of these hills and their northern slopes contain some conifers. On the lower slopes are groves of aspen. The level portions of the township, those within Jackson Hole, are mainly covered with sage and grass.

Township 42 north, range 116 west.—This township is comprised entirely in the valley of Jackson Hole. On the south line of this township the Gros Ventre joins the Snake. The surface of the township is level, except for river benches. The rivers are bordered by broad belts of cottonwood and willows. The bench lines are in the main covered with sage and grass. Few conifers are found in the northwest corner of the township.

Township 42 north, range 117 west.—This township is mostly comprised in the Teton Range, the southeast corner only being within Jackson Hole. This portion is covered with sage and grass, and the streams coming down from the mountains have formed sloughs and meadows, from which considerable hay is cut. The mountains are almost entirely treeless, with the exception of a few small groves of conifers on the lower slopes.

Township 42 north, range 118 west.—This township is almost entirely comprised in the Teton Range and contains very little timber except in the canyons of Darby and Fox creeks. The former stream, especially, has a fairly good body of timber on it. Aside from these two canyons the only timber is found in a few groves scattered over the lower slopes.

Township 41 north, range 110 west.—This township is traversed by the upper waters of Gros Ventre River, flowing northeastward across it in a narrow valley. The hills on each side are fairly well covered with conifers.

Township 41 north, range 111 west.—This township is traversed by branches of Gros Ventre River, between which is a high, rolling country. It contains very little timber; large areas have been recently burned.

Township 41 north, range 112 west.—This township is drained by a creek flowing north across it into Gros Ventre River. The land rises gently from the valley of this creek on the eastward, and is almost treeless. West of this creek are scattered groves of conifers, covering perhaps one-half the area.

Township 41 north, range 113 west.—This township is traversed from south to north by a branch of Gros Ventre River. From its valley the land rises steeply to high, plateau-like summits, with an altitude of 10,000 to 11,000 feet. The township contains very little timber, neither the slopes nor the summits of these plateaus being forested.

Township 41 north, range 114 west.—This township is drained by Little Gros Ventre Creek. From its narrow, canyon-like valley the land rises steeply several thousand feet to the summit of high plateaus, between 10,000 and 11,000 feet in altitude. The canyon walls of this stream are fairly well timbered. Elsewhere timber occurs only in small groves and bunches, while the summit of the plateau is everywhere bare.

Township 41 north, range 115 west.—This township is made up in the main of extremely broken country, draining into Gros Ventre River. On Pollock Creek, one of the branches, is a considerable body of good timber. Elsewhere timber occurs only in patches of small area, and consists entirely of conifers.

Township 41 north, range 116 west.—This township lies in the main within Jackson Hole, and contains the lower Gros Ventre buttes and the western end of the mountain mass lying south of Little Gros Ventre Creek. Besides a few scattered groves of conifers, the township contains no timber, except on the western end of the upper Gros Ventre buttes, lying in the northwest corner of the township. This is well timbered with conifers.

Township 41 north, range 117 west.—At least half of this township lies within Jackson Hole, and is traversed by Snake River from north to south and by Fighting Bear Creek. That part of the level valley lying between the river and Fighting Bear Creek contains scattered groves of lodge-pole pine and Engelmann fir, with open parks and a little cottonwood. The western part of the township is in the Teton

Range, and contains several patches of timber of some importance. One of these, 3 or 4 miles square, lies on the mountain spur. Another is on the south wall of East Pass Creek, where there is a sawmill engaged in cutting lumber for local consumption.

Township 41 north, range 118 west.—This township is comprised within the range, and its surface is extremely rugged. On the south canyon wall of Trail Creek, which flows westward from the pass, is a considerable body of good timber, and there are a few small patches scattered about elsewhere on the mountain spurs.

Township 40 north, range 110 west.—This township comprises high, rolling country about the heads of Gros Ventre River. This area is perhaps two-thirds covered by young pines.

Township 40 north, range 111 west.—The surface of the country is entirely similar to that of the township last described, being high and rolling, but there is scarcely any timber on it.

Township 40 north, range 112 west.—This township also lies high, being at the heads of branches of Gros Ventre River, and consists of a rather undulating country. It is estimated that half its area is covered with groves of pine.

Township 40 north, range 113 west.—This township is intersected by the gorges of streams flowing into Gros Ventre River. The country is high and broken and contains no timber.

Township 40 north, range 114 west.—This township is very similar to the one last described, being high, broken, and timberless.

Township 40 north, range 115 west.—This township comprises the summit of the hills from which flow the waters of Little Gros Ventre Creek. It is high and broken, and the only timber contained on it is in a few scattered groves.

Township 40 north, range 116 west.—The eastern part of this township comprises the lower slopes of the hills in which Little Gros Ventre River collects its waters. These hills are almost timberless, the forest consisting of scattered groves of trees. The western half is in the valley of Jackson Hole. It is a level country covered with sage and brush.

Township 40 north, range 117 west.—The northeastern portion of this township is in Jackson Hole, the level portion being sharply outlined by Snake River, which flows southeast across the corner of the township, closely hugging the foot of the Teton Mountains. The western part of the township, including fully three-fourths of it, is included within the range, the northeast slopes of which are fairly well timbered.

Township 40 north, range 118 west.—This township is entirely comprised of the Teton range, and owing to its high and rugged character contains no timber whatever.

SAWMILLS.

The sawmills operating in this reserve and its vicinity are few and of small capacity. One that is off the reserve is situated east of the Teton Pass, and is now (1877) in operation. The market must mainly consist of the settlers of Jackson Hole, for the steep road over the pass will prevent any heavy load being hauled over it.

Darby Creek sawmill.—This is a new mill which has just gone into operation. In addition to a sawmill, there is also a mill for "finishing" lumber. To this mill the inhabitants of Teton Basin look for lumber. There is said to be 1,000,000 feet above it, and the estimate does not appear excessive. All the mills saw mainly *P. engelmanni*, but also cull out the large *P. murrayana*, and a red fir if near is, of course,

also cut. The logs are 20 to 30 feet long, but the lumber has many knots. The logs for this mill will be cut from the low, damp ground above.

No sawmills are on the Yellowstone Reserve, but some lumber was sawed by a Government contractor for the soldiers' quarters and the bridge over the Snake. The trees to be sawed were "culled out." The mill was a portable one.

Teton Creek sawmill.—This is an old mill, having been in operation, it is said, nine years. The mill is supposed to be nearly worn out and it seems certain that there is no more timber of any account to be sawed. It is sawing now on an "order." The quantity of timber sawed is not known, but is probably not a large amount, as little is required to supply the needs of a community that builds log houses and pole fences.

Lee Creek sawmill.—This mill has not cut very much, and has been ordered out by the Government. It has permission to saw the logs on hand, about seventy-five, and have piles of lumber made from about the same number. There does not seem to be so much lumber to be cut as above the Darby Creek mill. All the mills saw mainly *P. engelmanni.* It is the largest tree with the largest trunk.

ROADS AND TRAILS.

It seems hardly necessary to discuss fully the practicability of transporting lumber in a country that has so little that is merchantable. The distance from a market is so great and the timber is so poor that it will probably never be exported, even if a railway should be built through the valley. There will, however, be a small home demand. There is a road of easy grades up the Snake to the Yellowstone Park which would also be good to Victor and Teton Basin but for the exceedingly steep grades about Teton Pass. The road from the United States military station by Grassy Lakes to Fall River has very easy grades so far as I have seen it, and is said to be excellent its whole length. Logs could be easily floated down Buffalo Creek and Gros Ventre, both large streams, and roads can easily be constructed up their valleys well into the mountains.

GAME.

Great numbers of elk come down from Yellowstone Park and feed in the high mountains during the summer. In the winter, when they are driven by cold and deep snows to seek their food at lower elevations, their number is much increased. The settlements of the Teton Basin and regions west of the mountains have very much restricted their winter feeding grounds, and the settlement of Jackson Hole increases the difficulty of finding winter feed. It is said that a thousand died from starvation in Jackson Hole last winter.

RANCHES.

There were within the reserve, at the time of its examination, about 40 ranches, 19 of which were on the eastern edge of the Teton Basin and 21 in Jackson Hole. These are, in the main, small cattle ranches, on which there is practically no cultivation of the soil. The cattle range during the summer and wild hay is cut for their winter subsistence. Jackson Hole and the neighboring mountains being a resort for

fishermen and sportsmen, much of the business of the settlers in this valley consists in supplying these tourists with outfits and supplies.

Owing to the hostility of the present residents of Jackson Hole and the Teton Basin, all of whom are cattlemen, there are no sheep within the reserve. The number of cattle and horses in Jackson Hole is very small, being limited by the amount of forage which can be cut and stored for winter use. At present they range in the valley, to all parts of which their range does not yet extend.

YELLOWSTONE PARK RESERVE, SOUTHERN PART.

Limits and topography.—This reserve lies east and south of Yellowstone Park. The portion south of the park, lying between its south boundary and the north boundary of the Teton Reserve, which is the parallel of 44° north latitude, and between the one hundred and tenth meridian and the west boundary of Wyoming, was examined by Dr. T. S. Brandegee, and the following report has been prepared from notes furnished by him:

This portion of the Yellowstone Park Reserve has a breadth from north to south of approximately 10 miles, and its length east and west is 51 miles. It comprises an area of 510 square miles, or 326,400 acres. The eastern part is drained northward by Upper Yellowstone River, while the greater portion of it is drained southward by Snake River and its tributaries.

The elevation of the region is great, ranging from 7,000 to over 10,000 feet, with an average elevation probably between 8,000 and 9,000 feet.

Upper Yellowstone River enters near the southeast corner and flows northwestward across the reserve in a marshy valley about a mile in width. East of the river the land rises to a high plateau 9,000 to 10,000 feet in altitude. West of it the country between the river and Atlantic Creek, which heads in Two Ocean Pass, is plateau-like in character, with summits exceeding 10,000 feet in altitude, and is much dissected by streams. The Continental Divide, separating the Upper Yellowstone from the drainage of Snake River, has a general altitude of about 10,000 feet, but is broken by several passes at much lower altitudes. The well-known Two Ocean Pass, in which head Atlantic and Pacific creeks, which have water communication, has an elevation of 8,200 feet. A pass separating Mink and Falcon creeks is slightly lower, its height being 8,100 feet.

West of the divide and east of Snake River the country is mountainous, the summits ranging from 9,000 to 10,000 feet. There is little system to this country and the streams pursue circuitous courses. Snake River flows across the reserve in a course a little west of south in a marshy valley about a mile in width. The country west of Snake River is the northern extension of the Teton Range. It is here much depressed, presenting little of the rugged character which prevails farther south. On the southern border of the reserve these mountains reach an altitude of 9,000 feet, from which they descend to a depression at the north boundary of the reserve, where there is a broad pass connecting the valley of Snake River with Falls River Basin, and having at the divide an altitude of 7,000 feet. Falls River Basin, which occupies the western portion of the reserve, is low, level, and very marshy, with an altitude slightly less than 7,000 feet.

This region, owing to great altitude, has an ample rainfall and a severe climate. It is probable that no part of it is suitable for agriculture. The question of agricultural lands in this reserve may, therefore, be dismissed on account of the climate.

FORESTS.

As a whole, this portion of the Yellowstone Park Reserve has much more forest on it than has the Teton Reserve, lying immediately south. This fact is largely due to the somewhat greater altitude of the region, and perhaps also to the fact that fires have not been quite so frequent or so destructive. There is no part of the reserve, except the limited areas which are above timber line, on which forests will not grow freely if protected from fires, and the fact that it is not entirely clothed with dense forests is probably due wholly to the former prevalence of this destructive agent.

The forests of this region are principally made up of *Pinus murrayana*, or lodge-pole pine. Besides this species groves of quaking aspen are scattered in many localities, especially where fires have raged in recent years. These are especially abundant west of the Teton range. In certain localities *Pinus flexilis* is found abundantly, especially about Huckleberry Peak, on the summit of the Continental Divide, and generally on exposed ridges. There is very little *Picea engelmanni* (Engelmann's spruce) in the reserve. It is found occasionally along the streams, and some is found about the slopes of the Continental Divide. Red fir is scattered about quite generally through the forests in isolated specimens. *Abies subalpina* is nowhere abundant, but is generally found on the higher elevations and along the streams. In brief, the species are the same as found in the Teton Reserve, and their distribution is similar. Indeed, the general notes relating to the Teton Reserve will be found to apply very closely to this one.

Since this reserve has not been subdivided, it will be necessary, in the detailed description of it, to refer to natural landmarks rather than to township lines. This description will be given, commencing at the east and going westward.

The valley of the Upper Yellowstone is, in the main, open or covered with willow brush. The lower slopes of the plateau to the east are pretty well timbered, especially on the isolated summit known as Hawks Rest, and the slopes of the valley of Thoroughfare Creek. The higher slopes and the summit of the plateau are entirely bare.

The northern end of the plateau, separating Atlantic Creek from Yellowstone River, is heavily timbered up to the summit. Following up the slopes of this plateau southward along the west wall of the valley of the Upper Yellowstone, the timber diminishes in amount and becomes reduced to scattered groves, which extend over the summit of the plateau, covering, perhaps, one-third its area. On the side toward Atlantic Creek this condition of things continues, but the proportion of land covered by the timber remains about the same. The valley of Atlantic Creek and the slopes of the plateaus rising from it on the west are covered with scattering groves of timber, one-fourth to one-half the land being covered. The plateau slopes rising from the valley of Falcon Creek on both sides are heavily timbered, but about the head of the creek the timber becomes scattering. The summit of the Continental Divide, from the north boundary of the reserve to Two Ocean Pass, is either bare or covered with scattered groves alternating with open parks.

West of the divide the country drained by the head waters of main Snake River and Fox Creek is covered with scattered groves of trees. Farther south, between Pacific and Mink creeks, upon the west slope of the divide, is found one of the heaviest bodies of timber in the reserve. It covers nearly 20 square miles, and is almost a solid forest, averaging over

2,000 feet B. M. to the acre. The central portion is the most dense, and there, for an area estimated at a square mile or more, the forests average more than 5,000 feet per acre. South of Pacific Creek is another considerable body of timber, averaging more than 2,000 feet per acre, although near the creek fire has destroyed some portions of it.

The east slopes of Big Game Ridge contain very little timber, distributed in groves. The west slope of the ridge is quite similar in timber distribution, except near its southern end. Here is another heavy body, covering most of the country between Gravel Creek and the summit of the ridge, an area 4 miles in length by 1 mile or more in breadth.

The country bordering on Harebell, Wolverine, and Coulter creeks contains scattered groves, the timber covering perhaps half the area. The timber becomes more dense farther down the course of main Coulter Creek. Southward, beyond the divide, along the streams flowing southward to Snake, there is very little timber. This region, extending on the north to the higher slopes of the hills and eastward as far as Pinon Peak and the valley of Gravel Creek, has apparently been burned not long ago, and some portions of it, as indicated by the red patches, very recently. On this area there are no large trees, but here and there are scattered groves alternating with barren patches. This incipient forest is mainly composed of firs and *Abies subalpina*. It contains also large areas of dead standing and fallen timber, the remains of the fires.

A large area of timber lies just east of Snake River, extending eastward north and south of Huckleberry Mountain. This consists mainly of dense groves of young Murray pines, interspersed here and there with dead standing timber, and on the higher elevations with *Pinus flexilis*.

West of Snake River the triangular area between the river and the stream leading up toward Grassy Lakes, on the north side, is covered with a scattering growth of pines of good size, suitable for lumber purposes. On the south side of this creek, extending across the divide and down the west side of the Teton Range, is a large area of good timber, grading above the 2,000-foot limit over most of the area, while in two localities about Grassy Lakes and on the west side of the divide it is still better, grading above 5,000 feet. Here and there throughout this body of timber are dead pines standing and fallen, giving evidence of fires in the past. A similar but smaller body of timber is seen on the south side of Berry Creek. On the higher summit of Teton Range the timber is either scattering or is entirely lacking.

SETTLEMENT.

The only settlement within this part of the reserve is a station of the United States troops on Snake River. There are no sawmills within it and it is unlikely that there will be any demand for timber from it in the immediate future, as the nearest settlements of magnitude, those in Teton Hole and in Wind River Valley, may be more economically supplied from other sources.

[Extract from annual report of Secretary of the Interior for fiscal year ended June 30, 1898.]

NATIONAL PARKS AND RESERVATIONS.

THE YELLOWSTONE NATIONAL PARK.

This is a tract of land near the head waters of the Yellowstone River, in the States of Montana and Wyoming, dedicated and set aside by the act of March 1, 1872 (17 Stat., 32), as a public park or pleasure ground for the benefit and enjoyment of the people. It is 62 miles in length from north to south, 54 miles in width from east to west, and contains about 3,348 square miles, or 2,142,720 acres. Its area is greater than that of the States of Delaware and Rhode Island combined. The average altitude is about 8,000 feet.

Capt. James B. Erwin, United States Army, the acting superintendent, reports that he assumed charge November 15, 1897, relieving Col. S. B. M. Young, United States Army, who had been ordered to active military duty, and has continued in charge since, except from March 13 to July 11, 1898, when he was on detached service, during which time Lieut. G. O. Cress, United States Army, performed the duties of superintendent.

During the winter of 1897-98 much vigilance was exercised on the part of the officers, men, and the scouts stationed in the park to protect the game from poachers, necessitating frequent trips on snowshoes to the sections of the park where the wild game is mostly to be found. Several poachers were arrested, subsequently convicted upon trial, and fined. Previous to June 1, at which date the stages begin their summer travel, crews were sent over all the roads, snow and fallen timber removed, and the roads otherwise repaired, making them safe for travel.

To meet the various demands of the public, different classes of transportation have been provided through the park, viz: Regular stage lines, steamboat transportation on Lake Yellowstone, licensed and private transportation, whether by wagon, pack train, horseback, or bicycle. The former is represented by the Yellowstone National Park Transportation Company, running its stages from Cinnabar, Mont., on the north of the park, the railroad terminus of a branch line of the Northern Pacific Railway, and over the usually traveled route of tourists, via Mammoth Hot Springs, Norris, Upper Geyser Basin, over the continental divide to Yellowstone Lake, Canyon, Norris, Mammoth Hot Springs, and thence to Cinnabar. The Mondia and Yellowstone Stage Company (Humphrey & Haynes) enter the park at Riverside, from Mondia, a station on the Oregon Short Line, and travel over the same route as the other stage line, as follows: Fountain Hotel, Upper Geyser Basin, over continental divide to Yellowstone Lake, Canyon, Norris, Mammoth Hot Springs, Norris, thence via Riverside to Mondia. The steamboat company operates one steamboat, which makes a daily trip on the lake. Licensed transportation includes a number of individuals who are licensed to personally conduct parties through the park, furnishing the necessary camp equipage and food.

The changes in the road system of the park during the past year and those contemplated for the coming year are as follows: The main traveled road, cut off Elk Park to Gibbon Meadow, is now completed and used by park transportation companies; the road along Madison River from falls of the Firehole River to boundaries of park completed and used by the Monida and Yellowstone Stage Company; road from Upper Geyser Basin to Lone Star Geyser is being used by the same company; road is projected from Canyon Hotel to Yancey's.

The total number of tourists visiting the park from opening of season (June 1) to September 30 was 6,534. The aggregate number carried over the regular route by the Yellowstone National Park Transportation Company was 2,196, and by the Monida and Yellowstone Stage Company 234; aggregate number carried through by licensed transportation of personally conducted camping parties, 890; aggregate number carried through in private transportation, 3,437; bicyclers, foot travelers, etc., included. During the season 2,256 tourists took the trip across Yellowstone Lake on the steamboat of the Yellowstone Lake Boat Company. Of this number, those who came into the park by the regular stage lines numbered 1,225, and those who went through the park by other means of transportation numbered 1,031.

The regulations for government of the park, established and enforced, though sometimes misunderstood and not appreciated by a few of the travelers of the park, seem to fully and completely accomplish the object for which the park was set aside, and the intentional violators of such rules and regulations of the park have been very few.

The system of enforcing them is by means of soldiers stationed at nearly regular distances on the usually traveled routes, who patrol same, and especially by guards from these stations, who are always present at the most interesting points, thereby preventing their desecration and the destruction of the natural phenomena. It has been in force for some years, and no better could be devised.

A complete and accurate record of all who enter and travel through the park is kept by the soldiers stationed at the various points in the reservation, except those who enter by the stage lines, a record of whom is kept at the hotels.

There has been no intentional violation of terms and conditions of any lease during the past year. During the season the Monida and Yellowstone Stage Company have constructed three barns, each holding from 8 to 12 horses, with additions for grain, and sleeping quarters for drivers and stock tenders.

The park has been exceptionally exempt from forest fires this year, due not only to the thoroughness with which the patrol work was done, but also to the growing carefulness in reference to fires exercised by camping parties and others. But two fires were reported, neither doing much damage, being brought under control by a detail of officers and men.

Leases held in the Yellowstone Park are as follows:

Yellowstone Park Transportation Company: Mammoth Hot Springs, 2 acres; Norris, 2 acres; Fountain, 1 acre; Upper Geyser Basin, 2 acres; Lake, 2 acres; Canyon, 1 acre, building, etc., for the accommodation of employees and stock.

Yellowstone Park Association: Mammoth Hot Springs, Mammoth Hotel and commissary; Mammoth Hot Springs, Cottage Hotel and Mammoth Barn; Fountain (Lower Basin), cottages; Fountain, Fountain Hotel and barn; Lake, Lake Hotel and barn; Canyon, Canyon Hotel, pump house, and barn; Upper Geyser Basin, hotel and barn (not yet constructed).

Yellowstone Lake Boat Company: Near Lake Hotel, 2 acres; Frank Island, 2 acres; Stevensons Island, 2 acres; Dot Island, 1 acre; West Thumb, 1 acre; Ways, 2 acres; Southeast Arm, 2 acres; Dot Island Game Corral, 2 acres; to be located by superintendent, 6 acres.

William W. Humphrey and F. Jay Haynes: At Upper Geyser Basin, Thumb, Lake Outlet, Grand Canyon, Norris Geyser Basin, Mammoth Hot Springs, not to exceed 1 acre at each point; building, etc., for the accommodation of employees and stock. (Assignments not yet made.)

Jennie H. Ash: Mammoth Hot Springs, dwelling, post-office, and store.

Ole A. Anderson: Mammoth Hot Springs, dwelling and store.

John F. Yancy: Pleasant Valley, hotel.

F. J. Haynes: Mammoth Hot Springs, studio; Upper Geyser Basin, studio.

Henry E. Klamer: Upper Geyser Basin, dwelling and store.

The Yellowstone Park Association owns and controls, under lease from the Department, hotels at the following places in the park: Mammoth Hot Springs, Lower Geyser Basin, Yellowstone Lake, and Canyon; also, lunch stations at Norris Geyser Basin, Upper Geyser Basin, and Yellowstone Lake. The hotels are all so located as to stage travel that tourists using this transportation always finish up their day's journey at a hotel, the lunch stations being merely places to obtain noonday refreshments en route. The hotels have been well conducted, but the association reports that the business has been carried on at a loss of about $25,000.

It asks to be relieved for the present of the responsibility of constructing a new and much-needed hotel at Upper Geyser Basin, which, under its lease of ground at that site, is to be completed in time for the tourist season next year. Frequent demands have been made for a hotel at this wonderful spot. Besides, by the erection of this hotel the present route through the park will be so divided up that much fatigue and discomfort to the tourist will be avoided.

Permanent camps were established during the year by W. W. Wylie, under contract with the Department, at the following points: Apollinaris Spring, Upper Geyser Basin, Yellowstone Lake, and Canyon, besides lunch stations at a point about midway between Norris and Lower Geyser Basin, near the Yellowstone Lake.

These camps seem to fulfill a demand on the part of a certain number of travelers in the park who wish to enjoy whatever benefits and pleasure may be received from camp life. Inspections made from time to time found them all neat and clean.

Frequent inspections have been made of all stage lines and other transportation, of the hotels, lunch stations, the permanent camps, and of the steamer on the Yellowstone Lake. The transportation lines have given excellent service to their patrons; their horses and vehicles are always in first-class condition and their personnel polite, courteous, and efficient. The hotels are thoroughly clean and neat, the food of the best quality and the service excellent, and fulfill every requirement of the traveling public. No complaints have been made.

The camps and lunch stations are neat and clean and have given satisfaction.

A number of trips were made on the steamer on Yellowstone Lake. It was always found to be in perfect condition and thoroughly safe.

Game in the park, excepting buffalo, is reported as increasing in numbers, and especially is this true of deer, elk, antelope, moose, and mountain sheep. Black bear are very plentiful and have proved very destructive to the stores of the troops on station, lunch stations, and campers. If they continue to increase in the future as in the past it will be necessary to take steps to rid the park of the yearly increase. They are numerous at the garbage piles of the hotels, and are objects of much interest and enjoyment to the tourists. The acting superintendent estimates that there are probably 50 buffalo yet in the park, and he attributes the fact that they are not increasing to too much

interbreeding. He believes with new stock introduced into the herd an increase would follow. Coyotes are very numerous in certain sections, and they do some damage to the young elk, but the young deer and antelope are their particular prey. Beaver are more plentiful than ever before, and their locations are carefully watched and protected. Otter are abundant; martens plentiful; foxes are in goodly number, and there are many muskrats.

The many streams and lakes were largely stocked in the past with fish. The latter have multiplied, despite the enormous quantity caught yearly, and there is yet an abundant supply in all the streams.

The acting superintendent recommends the construction of a new road from the Canyon northward, following the canyon of the Yellowstone River, over Mount Washburn, and thence by way of Tower Creek to Yancey's, and thence to Mammoth Hot Springs. From the Canyon to Yancey's, by the eastern trail, the road will be about 23 miles long and can be built for $45,000.

From Yancey's to Mammoth Hot Springs is 20 miles. Some 4 or 5 miles of this road was built last year, leaving some 15 miles to construct, costing about $15,000, making $60,000 in all. The acting superintendent recommends that this amount be appropriated for this specific purpose in addition to the usual appropriation for the protection and improvement of the park. The construction of this road will obviate the necessity of visitors going over from 28 to 42 miles of the same road twice.

Appended to the report is a map of the park and forest reserve, showing the change in the road system since last year.

Under date of February 1, 1898, there was transmitted to Congress a report made on the 12th of January, 1898, by Col. S. B. M. Young, Third United States Cavalry, then acting superintendent of the park, recommending the extension of the limits of the park, and submitting a draft of a bill with a view to carrying the same into effect.

The boundaries, as suggested in said bill, which are indicated on a map accompanying the same, would extend the limits of the park so as to embrace the Yellowstone Timber Land Reserve, which lies on the east and south boundaries of the park and comprises about 1,914 square miles; all that portion of the Teton Forest Reserve lying east of the summit of the Teton Range and comprising about 1,050 square miles and adjoins the Yellowstone Timber Land Reserve on the south, together with an unreserved area of about 30 square miles at the southwest corner of the park in Idaho and an unreserved area of about 260 square miles at the northwest corner in Montana.

In the forest reserves are fine bodies of timber which it is important should be preserved from fires, because of its value as timber, as well as the protection to watersheds and against fires running into the park.

It is reported that during the winter months the large game from the national park herd roam, to a very considerable extent, in the areas proposed to be included within the park, and they should have all protection possible from destruction by marauders, who are constantly on the watch for game as it roams out of the park limits. The State game laws are applicable to the forest reserves, and for this reason it is impracticable to prevent the killing of game in the reserves in the same manner and to the same extent as it is prohibited in the park. The superior discipline of regular troops makes a more effective patrol than the civil forest officers; and cavalry can cover a greater extent of territory with more expedition and is better able to cope with trespassers than are forest rangers.

In view of the importance of protecting this country, which has an international reputation on account of its scenic beauties, and to throw additional safeguards about the big game whose natural home is the national park, and to protect more effectually the timber embraced in the forest reserves adjoining the park, I think it a wise policy that the additional areas herein described be embraced in and placed under the laws and management relating to the Yellowstone National Park.

Since the transmission of the bill hereinbefore referred to for the consideration of Congress petitions have been made to the Department by residents of the State of Wyoming in favor of including the portion of the timber-land reserve abutting Yellowstone Park on the south within the metes and bounds of the present Teton Forest Reserve, and the addition to the latter of certain public lands on the south frequented largely by game, and the creating therefrom of a new national park, to be managed separately from the Yellowstone.

The claims of Mr. Baronett, on account of a bridge built by him over the Yellowstone River, and those of Messrs. McCartney and McGuirk, respectively, for improvements made within the park prior to the act of dedication, are equitable and just, and payment of them should not be longer delayed. Recommendations have been made in the annual reports of my predecessors, as well as in my last annual report, that Congress make proper appropriation for the adjustment of their claims. These recommendations are renewed, as in my judgment all proprietary rights within the park should be removed.

[Extract from Appendix A, Report of the National Forestry Committee.]

3. The Teton Forest Reserve.

This proposed reserve embraces 829,440 acres, and is south of and adjacent to the Yellowstone Park Timber Land Reserve. The forests which cover it are similar in character to those in the Yellowstone National Park; they are capable of supplying all local demands that will probably ever be made on them, but have little commercial value. This proposed reserve contains the Teton Range of mountains and Jackson Lake, and some of the grandest and most picturesque scenery of the Rocky Mountains. Within its borders are many streams, flowing west, south, and north, and as a reservoir of moisture it is important.

Incidentally it may be mentioned that this proposed reserve is a favorite home of the elk and other large game, and that as a game reserve it would well supplement the Yellowstone National Park and the Yellowstone Park Timber Land Reserve. Within the proposed reserve only two quarter sections have been entered. A number of settlers, however, are living on unentered lands in the neighborhood of Jackson Lake.

TETON FOREST RESERVE.

SUMMARY.

Situation: Northwestern Wyoming.

	Acres.
Area within present lines	829,440
Adverse holdings not important.	

	Per cent of total area.
Area of forest land	65
Area marked by fire	(?) 60
Area badly burned	(?) 40

Revised lines can not be drawn without further study.

Force recommended: This reserve should be provisionally placed in charge of the superintendent of Yellowstone National Park.

Sources of information: Report of T. S. Brandegee, special field assistant, United States Geological Survey. Statements of Henry Gannett, geographer, United States Geological Survey. No personal examination.

A rugged, broken mountain region, sparsely covered with open forest chiefly of lodge-pole pine, through which runs a broad valley of grazing land.

Injury from forest fires has been and continues to be very serious.

The protection of streams for irrigation is not of great importance here.

Mining has but little importance.

Agriculture is practiced little or not at all.

Grazing may probably be permitted in Jackson Hole.

Provision should be made to supply settlements in Jackson and Pierre holes with necessary lumber.

The Teton Forest Reserve is situated in northwestern Wyoming, contiguous to the Idaho boundary line, and has a length from east to west of 54 miles and a breadth from north to south of 24 miles. The total area included within its boundaries is 829,440 acres, nearly the whole of which is unburdened by adverse rights.

The striking feature of the topography is the Teton Range, which traverses the reserve from north to south and reaches an altitude of 13,370 feet. On the west the country descends rapidly to the valley of Pierre River and on the east to Jackson Hole. The latter is a level valley from 5 to 10 miles in width, crossing nearly the whole breadth of the reserve from north to south. It contains many lakes, the largest of which, Jackson Lake, is 10 miles long by 3 miles wide. The whole area of the reserve is drained by Snake River, which flows through Jackson Lake and Jackson Hole from north to south.

The climate is exceedingly severe, so much so that agriculture, except for the cultivation of forage plants, is said to be impossible. The rainfall, although no measurements have been made, is probably considerable, as would be indicated by the elevation, the mountainous character of the reserve, and the condition of the forest.

The forest.—The general character of the forest is broken and open. The trees are small, and the merchantable timber of the whole area trifling in amount compared with other reserves on the western slope of the continental divide. Four-fifths of the forest is composed of lodge-pole pine, with Engelmann spruce, Douglas fir (red fir), quaking aspen, and two cottonwoods as the other principal trees.

The lodge-pole pine is here a small tree, with average measurements as follows: Height, 60 feet; diameter, 1 foot: length of clear trunk, 25 feet. It is distributed from the lower portions of the reserve to an altitude of 9,000 feet, and furnishes fencing and rough building materials. The larger trees alone produce saw timber. The future economic value of the reserve must depend chiefly upon this tree.

The Englemann spruce occurs in moist situations from 7,000 to 10,000 feet in altitude, chiefly near the streams. It is abundant in places, and furnishes the larger proportion of logs cut in the reserve. Its average measurements are as follows: Height, 100 feet; diameter, 2 feet; length of clear trunk, none.

The Douglas fir (red fir) is not a common tree, nor anywhere locally abundant. It occupies for the most part dry situations, and resists fire exceedingly well. The average dimensions of mature trees are as follows: Height, 80 feet; diameter, 2 feet; length of clear trunk, 15 feet.

The quaking aspen and two cottonwoods are abundant, but for the present not economically important. The quaking aspen is next in abundance to the lodge-pole pine, and has approximately the same distribution, while the cottonwoods occur chiefly along streams. The latter occasionally reach a diameter of 4 feet, with a height of 75 feet.

Fire.—The whole area of the reserve is said to have been repeatedly burned over, with great damage to the forest. The inflammable character of its principal tree, the lodge-pole pine, here gives the fire question striking importance, as it does wherever this tree forms a considerable element of the forest growth.

Water.—Since the reserve contains only grazing and forest lands, irrigation, which has hitherto assumed no importance, is not expected to develop to any marked extent in the future.

Mining.—There has been no mining development of consequence within the reserve.

Agriculture.—As has been indicated, agriculture is without importance in this reserve, and no measures need be taken with a view to its extension in the near future.

Grazing.—Many thousand acres of grazing land are included in Jackson Hole, and some provision will be required to regulate pasturage, unless it is decided to exclude this area from the reserve. Since I am not personally acquainted with this reserve I am not prepared to make a specific recommendation upon the subject.

Forest force.—I am not prepared to make specific recommendations. The extent and situation of the reserve appear to indicate that it should be provisionally assimilated to the Yellowstone Park Forest Reserve. In that case special regulations will be required to open the reserve itself and all its resources to conservative use.

Forest management.—The present source of demand for the timber of the reserve are the settlements in Jackson and Pierre holes. The poor quality of the timber makes it certain that no large trade in forest produce can be developed within the reserve for some time to come, but eventually water transportation by way of the Snake River and its larger tributaries will make this forest economically important for the less thoroughly timbered regions down the river.

REPORT

OF THE

ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF THE SUPERINTENDENT,
Mammoth Hot Springs, Wyo., September 30, 1898.

SIR: I have the honor to submit the following report of the condition, management, protection, and improvement of the Yellowstone National Park from November 10, 1897, the date of the final report of my predecessor, to September 30, 1898:

Maj. Gen. S. B. M. Young, United States Volunteers (Colonel Third Cavalry, acting superintendent), left the Yellowstone National Park on November 15, 1897, and the duties of that position have devolved upon me, as being next in command, and subsequently, in compliance with telegraphic orders from the Department, from that time to the present, except during the period from March 13 to July 11, 1898, when I was on detached service, during which time Lieut. G. O. Cress, Fourth Cavalry, ably performed these duties.

At the time of departure of my predecessor there remained an unexpended balance of $66.01, with which to keep in repair the road from the Mammoth Hot Springs to Gardiner City, which, on account of its location in the canyon of the Gardiner River, must be constantly worked in the winter season; to protect the game of the park during the winter months from poachers; to open up the usually traveled route of tourists, who begin visiting the park on the 1st of June, and keep the same in repair until the appropriation for this year should become available. Owing to the very small balance of the appropriation remaining unexpended I had to rely mainly for protecting the game upon the services of Lieutenant Lindsley, Fourth Cavalry, and Scouts Morrison and Whittaker, with the assistance of the soldiers on winter station and in garrison. The work done by this officer, and these men, was of the highest importance to the park in the protection of its game, to a large extent prevented poaching, and resulted, in connection with the mild weather of last winter, in a large increase of the game life of all descriptions. The way in which these objects were accomplished will be treated under the heads of "Protection" and "Improvement" later on in this report.

The stage robbery which occurred in the park on August 14, 1897, an account of which was given by my predecessor in his report, was

brought to an end by the trial and conviction of George Reeb and Gus. Smitzer, at Cheyenne, Wyo., before United States court, and they were sentenced to two and one-half years in the penitentiary.

TRAVEL.

To supply the various demands of the public for transportation through the park, it has been found necessary to have and adopt different kinds, viz: Regular stage lines, steamboat transportation on Lake Yellowstone, licensed, and private transportation, whether by wagon, pack train, horseback, or bicycle. The former is represented by the Yellowstone National Park Transportation Company, running its stages from Cinnabar, Mont., on the north of the park, the railroad terminus of a branch line of the Northern Pacific Railway, and over the usually traveled route of tourists, via Mammoth Hot Springs, Norris, Upper Geyser Basin, over the continental divide to Yellowstone Lake, Canyon, Norris, Mammoth Hot Springs, and thence to Cinnabar. The Monida and Yellowstone Stage Company (Humphrey & Haynes) enter the park at Riverside, from Monida, a station on the Oregon Short Line, and travel over the same route as the other stage line, as follows: Fountain Hotel, Upper Geyser Basin, over continental divide to Yellowstone Lake, Canyon, Norris, Mammoth Hot Springs, Norris, thence via Riverside to Monida.

The steamboat company operates one steamboat, which daily makes the trip from the lunch station on the lake (known as West Thumb) to the Lake Hotel, and affords the tourist, whatever means of transportation he may use in making the park trip, an opportunity to take an exceedingly beautiful and interesting trip of some three hours on the lake.

Licensed transportation includes a number of individuals, who, under license from the Department, are authorized to personally conduct parties through the park, furnishing the necessary camp equipage and food. Private transportation, as its name implies, includes all other going through the park, using transportation of their own, of whatever nature.

For the purposes of protection and police, it has been found necessary to register at certain places in the park all persons traveling through it, exclusive of those transported by the regular stage lines, and below will be found a table giving the number of travelers in the park this year and the kind of transportation used.

Number of persons registered at stations during the season of 1898.

Number and location of station.	Camping parties.				Licensed transportation.			
	June.	July.	Aug.	Sept.	June.	July.	Aug.	Sept.
1. Mammoth Hot Springs	241	512	1,174	256	66	160	352	65
2. Norris *a b*	.....	.....	.....	.....	.....	.....	.....	.....
3. Canyon *a*	.....	.....	.....	.....	.....	.....	.....	.....
4. Lake *b*	71	538	1,263	469	42	112	240	30
5. Thumb *a*	.....	.....	.....	.....	.....	.....	.....	.....
6. Upper Basin	25	436	1,242	471	9	70	295	58
7. Lower Basin *b*	77	390	1,327	423	17	73	428	61
8. Snake River *b*	24	210	557	219	.....	.....	None.	.....
9. Riverside *b*	88	366	911	.....	19	55	88	.....
10. Soda Butte *b*	99	162	170	114	.....	.....	None.	.....

a No registration required.
b Winter station.

Number of persons traveling with registered guides (pack trains).

June	None.
July	39
August	74
September	31

The aggregate number of tourists visiting the park from opening of season (June 1) to September 30 was 6,534. The aggregate number carried over the regular route by the Yellowstone National Park Transportation Company, was 2,196, and by the Monida and Yellowstone Stage Company, 234; aggregate number carried through by licensed transportation of personally conducted camping parties, 890; aggregate number carried through in private transportation, 3,437; bicyclers, foot travelers, etc., included. During the season 2,256 tourists took the trip across Yellowstone Lake on the steamboat of the Yellowstone Lake Boat Company. Of this number, those who came into the park by the regular stage lines numbered 1,225, and those who went through the park by other means of transportation numbered 1,031.

To determine whether or not the park is becoming more traveled, and fulfilling gradually the mission for which created, viz, as a "pleasuring ground for the benefit and enjoyment of the people", a comparison of totals is made, from record, from 1895 to present date:

Number of tourists former years.

	1895.	1896.	1897.	1898.
Camping parties	2,594	1,797	4,454	3,437
Licensed transportation	374	454	1,354	890
Yellowstone Park Association	2,470	2,408	4,872	2,207
Total	5,438	4,659	10,680	6,534

It will be seen that 1897 brought the greatest number of tourists to the park, but the comparison should not be made with that year as a standard, as a great number of Christian Endeavorers, after their meeting in San Francisco, Cal., returned, via the Northern Pacific Railway, and visited the park. Their number can not be determined, but making reasonable deductions on account of this particular and exceptional class of travel, it will be seen that the season of 1898 in the park shows an increased number of tourists. This is yet more remarkable, as the conditions of the country, owing to the war, diverted more or less attention from the park, and probably decreased in no inconsiderable degree the number of persons traveling for pleasure during the summer.

SYSTEM OF PATROLING AND POLICING.

The most difficult task that the acting superintendent has to accomplish is to carry out the provisions of the dedicatory act of the park, setting it aside for the benefit and enjoyment of the people. Were it thrown open to the people, without restrictions of any sort, it would be only a short time before it would cease to be a pleasuring ground, while, on the other hand, the restrictions should be of such a nature only as to preserve intact, not only for the present but for the future, the salient and wonderful features which have made the park the most remarkable, as well as the most scientifically interesting, place in the world. The restrictions, as now established and sanctioned by the Interior Department, and enforced by the acting superintendent of

the park through the military force under his command, though sometimes misunderstood and not appreciated by a few of the travelers of the park, seem to fully and completely accomplish the object for which the park was set aside, and I am glad to say the intentional violators of the rules and regulations of the park have been very few.

The system of enforcing them by means of soldiers stationed at nearly regular distances on the usually traveled routes, and who patrol these routes, and especially by guards from these detachments, who are always present at the most interesting points, preventing their desecration and the destruction of the natural phenomena, has been established for some years, and no better could be devised. I know of no case where these soldiers, in the discharge of these very particular and exacting duties, have been other than courteous and polite toward the public, at the same time enforcing the law. These rules and regulations will be found in the appendix marked A.

In addition to these duties, it has been found necessary to keep a complete and accurate record of all who enter and travel through the park, except those who enter by the stage lines, a record of whom is kept at hotels, and this is also done by the soldiers stationed at the various points in the park.

HOTELS.

The Yellowstone Park Association owns and controls, under lease from the Department, hotels at the following places in the park: Mammoth Hot Springs, Lower Geyser Basin, Yellowstone Lake, Canyon; also lunch stations at Norris Geyser Basin, Upper Geyser Basin, and Yellowstone Lake. The hotels are so located as to stage travel that tourists using this transportation always finish up their day's journey at a hotel; the lunch stations being merely places to obtain noonday refreshments en route to hotels. It is, I believe, the intention of the association to build a hotel at the Upper Geyser Basin this fall. I trust this will be done, and completed in time for the tourist season of next year. Frequent demands have been made for a hotel at this most wonderful spot; besides, by the erection of this hotel, the present route through the park will be so divided up that much fatigue and discomfort to the tourist will be avoided.

PERMANENT CAMPS.

Under authority from the Department, Mr. W. W. Wylie has established permanent camps at the following points: Apollinaris Spring, Upper Geyser Basin, Yellowstone Lake, and Canyon, besides having lunch stations at a point about midway between Norris and Lower Geyser Basin, and near the Yellowstone Lake.

INSPECTION BY ACTING SUPERINTENDENT OF THE PARK.

Ever since the opening of the season, and until its close, frequent inspections have been made by me and other officers of the command, of all stage lines and other transportation, of the hotels, lunch stations, and of Mr. Wylie's permanent camps and lunch stations, and of the steamer on the Yellowstone Lake.

I have always found the entire personnel of the Yellowstone National Park Transportation Company polite, courteous, and efficient; their horses and vehicles always in first-class condition, and suited in every way to handle the business required of it.

The Monida and Yellowstone Stage Company is in the first year of its existence, and has employed the following:

Four-horse drivers	10-12
Two-horse drivers	4
Stock tenders	7
Assistant superintendents	2
Blacksmith	1
Bookkeeper	1

They had in use the following vehicles:

Eleven-passenger Concord coaches	12
Three-passenger Concord surries	4
Concord buggies	2

Also:

Horses	80
Four-horse Concord harness ... sets	16
Two-horse Concord harness ... do	8

Blankets, dusters, and complete barn supplies.

This stage company is of the first order in every respect; has given first-class service to its patrons, has opened up a new route to the park through a beautiful country, and I have found its entire personnel, by courtesy and politeness, desirous of making its route popular with the traveling public, which it will undoubtedly be.

Messrs. Humphrey & Haynes, who control the line, are both practical business men, with experience in this business, and are always courteous and obliging.

The steamer *Zillah*, running daily trips on the Yellowstone Lake, under the lease of the Lake Boat Company, and under the personal direction of Mr. E. C. Waters, her captain, who is also president and general manager of the company, has given full satisfaction to the public. I have made many trips on this boat, always found her in perfect condition, and thoroughly safe. The entire personnel of the boat are always attentive and polite to the passengers, doing everything for their pleasure and enjoyment. In addition to the regular tourist business, this steamer has had many excursions.

The hotels and lunch stations of the Yellowstone Park Association, under the able direction and management of Mr. J. H. Dean, fulfill every requirement of the traveling public. No better accommodations and food are furnished anywhere in the United States, under like conditions. The hotels are thoroughly clean and neat throughout, and the service excellent. It should be remembered that all articles of food, except meat, are shipped here, as there is no local market from which the daily supply of edibles can be obtained. I have not heard a single complaint from any guest of any of the hotels.

The permanent camps of Mr. W. W. Wylie seem to fulfill a demand on the part of a certain number of travelers in the park who wish to enjoy whatever benefits and pleasures may be received from camp life. I inspected frequently each of his camps and lunch stations, and found them all neat and clean, with all the comforts one could expect to find in camp. It is not possible to make a comparison between the accommodations furnished by these camps and the hotels. Each comes fully up to the requirements of its especial class, and the personal preference of each visitor to the park must and will determine the way of living while in the park.

Campers are another class of visitors to the park who furnish their own transportation, tentage, etc., and with whom the daily patrols

from stations have most to do in reference to the police and protection of the park.

The transportation under the heading "Licensed" has also been inspected and the camps of these parties looked after, wherever met. Satisfaction seems to have been given in all cases, for I have not heard one word of complaint from any of their patrons. A list of this licensed transportation will be found in the appendix marked B.

With private transportation of all sorts and descriptions the Department is not interested, except pack-mule transportation. Certain rules govern this kind while in the park, rendered necessary by a due regard to the safety of others traveling in vehicles, as well as the safety of the parties using the pack mules. This is the kind of transportation that is most generally used by hunting parties in the fall of the year, wishing to go through the park and hunt in the country south, southeast, and southwest of the park. Such transportation is restricted to the conditions of traveling on the usually traveled roads and leading the pack animals, for the reasons given above. When the party is under the control of a registered guide a greater latitude is allowed to the routes taken through the park, and a guide is only registered when he is personally known to be absolutely competent and reliable. A list of these registered guides will be found in the appendix marked C.

The Monida and Yellowstone Stage Company have seemingly absorbed the business previously conducted by Mr. C. J. Bassett, from Beaver Canyon, Idaho, into the park via the western entrance, as I have no reports of any passengers by his line during the past season, nor has he applied for license to conduct this class of business.

CARRYING FIREARMS THROUGH THE PARK.

The custom of carrying firearms of some description is nearly universal among the citizens of States bordering the park, who travel in their own conveyances, or on saddle animals; and of course those desiring to hunt in the country adjacent to the park, and who go through the park either on starting on their trip or returning, are fully equipped in this particular. With reference to all of these individuals, the regulation prohibiting firearms in the park, except on written permission from the acting superintendent, in which case the arms are sealed, has been strictly enforced. It is a wise regulation, and its enforcement is essential to the protection of the park.

The mere fact that this region has been set aside as a national park engenders a feeling of hostility toward it and toward the authorities here, on the part of the people living nearest to it; and the fact that it abounds in game, which is becoming more and more rare in other parts of the United States, intensifies the feeling of enmity. As the benefits to the people of the surrounding country derived from keeping the park intact and the game protected become better understood by them, this hostility will undoubtedly cease; and in performing the duties of acting superintendent I have endeavored to make this plain to all I have been brought in contact with, and, so far as possible, to make them friends of the park.

LEASES.

There has been no intentional violation of terms and conditions of any lease during the past year. The rentals under these leases are paid direct to the Department in Washington, except that of Mrs. Jennie H. Ash, which was forwarded through this office under date of August 9, 1898, and its receipt duly acknowledged.

The Monida and Yellowstone Stage Company have constructed on sites selected by me, three neat barns, holding from 8 to 12 horses (one at Upper Geyser Basin, 8 horses; one at Norris Geyser Basin, 12 horses; one at Mammoth Hot Springs, 12 horses), with additions for grain and sleeping quarters for drivers and stock tenders.

At the Fountain, Lake, and Grand Canyon they have used the barns of the Yellowstone Park Association; having made such arrangements until locations are made and permanent barns constructed.

The railway station of this line is Monida, on the Oregon Short Line, 60 miles west from the west entrance to the park ("Dwelles").

Between Dwelles and Monida is operated a daily relay line, and in use on this daily are 32 horses and 2 extra coaches. These extra coaches have been kept at Monida in case more tourists applied than could be accommodated by the daily.

At Dwelles are kept 7 coaches and 3 surreys, with drivers and teams, for park service. At Norris are kept 1 coach and 1 surrey to accommodate tourists holding Northern Pacific tickets, "Norris to Monida", who have made the regular park trip and are ticketed out via Monida. These are picked up at Norris, taken to Dwelles for the night, and then take the daily to Monida the following day.

A barn has been constructed at Monida that will accommodate 20 horses, and wagon sheds to accommodate the entire outfit. Wagons, harness, and equipment will be placed in the Monida barn for the winter and $20,000 insurance placed on same. Horses will be wintered in the lower Centennial Valley.

Stations have been constructed at Reeds, Red Rock Pass (Klondyke), and at Dwelles. A wagon bridge has been constructed by this company over the south fork of the Madison River, costing $75; approaches have been built to the Snake River ford, and a crew of 3 men and 1 team have been employed for two months, keeping the road free of rock and in repair.

Madison County appropriated $500, which was expended in addition upon the road between Monida and Dwelles. This road is now far better than the ordinary country road, and is nearly as good as the roads within the park. I append stage schedule of this company (Appendix G). The plats of the various sites granted under and required by lease from the Department to this company will be forwarded as soon as completed.

The building of Mr. H. E. Klamer, at Upper Geyser Basin, referred to in last year's report as not being then received, has been completed and received. A list of leases now held in the park is hereto appended (Appendix D).

UNITED STATES COMMISSIONER AND HIS WORK.

The presence of a United States commissioner at Mammoth Hot Springs to hear and determine cases of violations of the park laws and regulations is eminently satisfactory, and continues to do much to prevent these violations. I append herewith a report of persons tried by him (Appendix E).

FIRES.

The park has been exceptionally exempt from forest fires this year, due not only to the thoroughness with which the patrol work was done, but also to the growing carefulness in reference to fires exercised by camping parties and others. On August 8 a fire was reported 9 miles

northwest of Riverside Station, a short distance outside the park limits, but as the direction of the prevailing wind would soon bring it within the park, a detail of officers and men were sent, and after two days of much fatigue and hard work it was brought under control.

On August 26 a fire was reported and located between Barlow's Fork and Heart River in the southeastern portion of the park, but fortunately rain followed for several days, extinguishing it and rendering no work on the part of the troops necessary, other than a careful watch for several days. The causes of neither of these fires could be definitely determined, but that of August 26 unquestionably originated from camp fires carelessly left burning or smoldering. The origin of the fire of August 8 was not so plainly accidental, and the inquiry as to its origin was limited to the determination that its starting point was not within the park limits. It ought not to be difficult for campers in and in the vicinity of the park to understand the incalculable damage, both in the present and for future years, that can be done by not carefully complying with the park laws in this respect.

FOREST RESERVES.

Bordering on the eastern and southern limits of the park are two forest reserves, both of which have been recommended by my predecessor to be brought within the park boundaries and made a part thereof. It will be remembered that these tracts of land were set aside and established as a public reservation by proclamation of the President, made on March 30 and September 10, 1891, and though not coming within the provisions of the act of Congress approved May 7, 1894, are yet under the jurisdiction and control of the acting superintendent and the military force in the park for the enforcement of the law setting them aside, especially relating to the preservation of the game. To thoroughly determine the character of the forest reserve on the east, the settlers therein, game, etc., Lieutenant Lindsley, Fourth Cavalry, was sent to investigate the same, and on his return submitted a report which will be found in the appendix (F). It will be seen that there are many settlers in it, some in violation of law, and that a few mining claims are being worked.

The country does not seem to be the habitat of any large quantity of game. The forest reserve on the south contains no settlers, is of no mineral value, and is unquestionably a game country. I would for these reasons, therefore, urge that the forest reserve on the south be made a part of the park, and the forest reserve on the east be not further considered with this end in view. It is probable that whatever opposition has hitherto been encountered in taking in both of these reserves as part of the park would cease, when it is proposed to take in only that one on the south, which possesses only the advantage of being a great game country, and has no mineral or agricultural advantage to settlers. I would also recommend that the necessary legislation be enacted, bringing the forest reserves bordering the park under the provision of the National Park protective act, approved May 7, 1894, to preserve and protect the game. As is set forth in the notice of the Department, which has been placed in conspicuous places in and about the park, "All persons are warned not to hunt nor kill game thereon", and the penalty for doing this is ejection from the reserve, prosecution for trespass, and the holding of such persons pecuniarily responsible for any waste or damage, whether done intentionally or

caused by neglect. Such is the extent of the punishment, and in its present mild form it does not form a sufficient safeguard for the protection of the reserve and its game.

PROTECTION.

The following animals are found in the park:

Antelope.—These are yet numerous. The snow drives them from the mountains and high plateaus, their feeding and breeding ground in spring and summer, to the lower altitudes outside of the park, where many are killed.

Bear.—Plentiful, and have proved destructive to the stores of the detachments on station, lunch stations, and campers. If they continue to increase in the future as in the past, some means will have to be taken to rid the park of the yearly increase. They are numerous at the garbage piles of the hotels, and are objects of much interest and enjoyment to the tourists.

Buffalo.—There are probably 50 of these animals yet in the park. They are not increasing—due, I believe, to too much inbreeding. This is about the only wild herd in the United States, and steps should be taken to prevent the extermination of this herd from the evils of inbreeding by the purchase of a few good bulls. Full and ample protection is given these animals, and I believe that with new stock introduced into the herd, an increase would follow.

Coyotes.—Very numerous in certain sections. They do some damage to the young elk, but the young deer and antelope are their particular prey. Efforts are made in winter to keep their number down by poisoning carcasses of dead animals, and to a certain extent it has been successful.

Deer.—Numerous, on the increase; and the protection afforded them has done much to make them very tame. They are frequently seen by tourists along the usually traveled route.

Elk.—Numerous, and are increasing. The park is their breeding place in spring, and feeding ground in winter. Immense herds can be seen in nearly any direction in winter, and in certain localities in summer.

Fur-bearing animals.—Beaver, more plentiful than ever before, and their locations in the various streams in the park are carefully watched and protected. Numerous new dams have been constructed. Otter are fairly abundant. Martens are plentiful and widely distributed as are also the Canadian lynx, wild-cat, and mink. Foxes are in goodly number, the black and red being frequently seen, and some timber foxes being reported. There are also some badgers, and a great many muskrats, ground hogs, squirrels, chipmunks, skunks, porcupines, and rabbits. Of the latter there are the cottontails, a few jack-rabbits, many snowshoe rabbits, and the paca, the tiny rock rabbit. All these animals are increasing yearly.

Moose.—Quite numerous in the south and southwestern portions of the park and forest reserve, and are apparently increasing.

Sheep.—In considerable numbers in various sections of the park; especially are they conspicuous in winter, when they leave the higher peaks and seek a somewhat lower level to feed, and later on to breed. I believe their number is increasing.

Wolverines.—While not plentiful are distributed over a large area of the park.

BIRDS.

Pelicans, geese, ducks, gulls, cranes, swans, ospreys, hawks, eagles, grouse, jays of all kinds, water ousel, robins, kingfishers, and various other small birds abound in the park. The aquatic birds nest here and remain here until late in the fall, and, it is probable, during the winter in streams and lakes where the hot springs prevent entire freezing of the water.

As already stated, at the opening of the winter there was but a balance of $66.01 remaining on hand for both the protection and improvement. Using this until exhausted, and relying upon the untiring efforts and conscientious work of Lieutenant Lindsley, soldiers, and a volunteer scout, the protection of the park was as efficiently performed, if not to a greater extent, than in former years. The plan adopted was to ascertain the location of all persons who in past years have been guilty, or thought guilty of poaching, and never let them get beyond the surveillance of the park authorities. This was successfully done in many cases, and resulted in the capture and trial of some of them by the United States commissioner; and, with the assistance of the State authorities, by the civil courts, thus deterring others from attempting to poach. Unless actually taking part in the winter work here, the hardships are inconceivable, and I forward herewith as an appendix the report of these trips made by scouts and others, showing the work done. It represents miles of snowshoeing, embracing all portions of the park, under all sorts of weather and temperature, where the parties were their own pack animals, camping usually where night found them, or resorting to the snowshoe shacks, affording but little protection.

The Department supplied sleeping bags, which are of incalculable comfort; and before the winter sets in, comfortable cabins will be built at necessary and convenient points, stocked with rations and bedding, and having stoves, which will lessen materially the hardships and discomforts of these trips. With the end in view of having transportation of some sort for necessary articles for these winter scouting parties, I believed that the reindeer recently purchased by the Government for the Klondike relief party, which was subsequently abandoned, could be used to advantage, and accordingly addressed a letter to the Department asking, if practicable, that a few be sent here for this purpose. It is unfortunate that these animals were so located that they could not be sent here, for in the use of these animals or in sledge dogs lies the solution of winter work in the park.

FISH.

Many streams and lakes were stocked in 1889, 1890, 1893, and 1895, have multiplied abundantly, and in spite of the enormous quantity caught yearly, and those destroyed by animals and birds, there is apparently an ample quantity yet in all the streams. I endeavored to have a hatchery established in the park, believing this to be the most appropriate and suitable place in the United States, as this is the reservoir drained by the principal rivers of the Atlantic and Pacific oceans, and fish planted in these streams would, with natural conditions fulfilled, soon fill the streams outside the park, but the United States Fish Commission did not deem it advisable. Later on this year, it is my intention to determine if the lake bass planted in certain lakes in the

park have survived; none as yet have been caught, and it is possible that they may have perished for want of proper food. There are certain waters in the park that will afford ample food for them, and, if possible, these waters will be stocked. There is no finer trout fishing in the world than that of the waters of the park, and it is free to all.

From the above it will be seen that the park as a game and fish preserve has not its equal in the world; the variety is great, and it is eminently fitted to sustain this variety under the protection of the Government. An increase in appropriation means an increase in the means and facilities of protection, and as a national game preserve, which not only holds secure the remaining wild animals and game birds of this country, but enables them to breed and multiply, thus supplying the needs of neighboring States, it is deserving of an increased fund for this purpose. This leaves out entirely its charm as a pleasure ground for the tourist, with its wonderful natural phenomena. To maintain both of these conditions there is but one inadequate appropriation for the park, viz, that for its protection and improvement.

IMPROVEMENT.

Nature can not be improved upon; the wise policy for years held by the various acting superintendents, has resulted in the laying out of roads interfering the least with natural conditions, and affording the sight-seer with the easiest, most direct, and at the same time safest routes to those wonderful sights which nature has lavishly worked in the park. This work is not yet completed, and some of the grandest scenery and phenomena in the park are yet unseen by the great majority of visitors, on account of lack of means to construct these safe and convenient roads. The first work in the spring, previous to June 1, at which date the stages begin their summer travel, is to send a crew over all the roads, shoveling out snow yet remaining in deep drifts in many places, removing fallen timber, repairing the roads, and making them safe and fit for traveling. As stated before in this report, there were absolutely no funds on hand for this work at the opening of the present season, but with the aid of the scouts and soldiers the roads were opened up, and put in fit condition for travel, and no delay was caused to the tourists.

As is well known, the present traveled route carries the tourist from Cinnabar, via Mammoth Hot Springs, Norris Geyser Basin, Lower Geyser Basin, Upper Geyser Basin, Lake, Canyon, and again to Norris, Mammoth Hot Springs, to Cinnabar; or, arriving at Monida, he enters the park on it western boundary at Riverside, thence to Lower Geyser Basin, and with the exception of the ride from Mammoth Hot Springs to Cinnabar, his route is as above, returning to Monida via Riverside. It is thus seen that 28 miles in one case, and 42 miles in the other is gone over twice, which is objectionable. This can be avoided by the construction of a road from the canyon northward, following the canyon of the Yellowstone River over Mount Washburn, and thence by way of Tower Creek into Yancey's, and thence into the Mammoth Hot Springs.

There are at present two trails leading from the canyon to Yancey's over Mount Washburn, joining about a mile and a half south of Tower Creek. I have been over both of these trails, examining each carefully, both for scenic effect and practicability for road construction, and on both these grounds am thoroughly satisfied that the eastern (or lower) trail is the route to be followed in constructing this road, which will be

about 23 miles long, and can be built for $45,000. From Yancey's to Mammoth Hot Springs is 20 miles. Some 4 or 5 miles of the most costly part of this road was built last year, and has been kept in thoroughly first-class condition, leaving some 15 miles to construct, costing about $15,000. It is recommended that this amount ($60,000) be appropriated for this specific purpose, in addition to the usual annual appropriation for the protection and improvement of the park.

The monthly reports of work done in the improvement of the park have given in detail what has been accomplished the past summer, and the further projected improvement in roads already constructed, as set forth in project submitted at the time the appropriation became available, will be completed before the close of the season.

This will be done within the limits of the appropriation, still keeping sufficient on hand for the protection of the park during the eight months of winter, and for opening the roads for tourist travel beginning on the 1st of next June. Taking out of the appropriation for this year of $40,000 the smallest necessary amount for protection ($3,000), there remains but $37,000 with which to do this work. And when it is remembered there is 170 miles of constructed road which has to be gone over entirely at the commencement of every season, kept in repair for four months of the year, and then put in the best possible shape to withstand the effects of winter, it must be confessed that $218 is but a scant allowance for each mile of road. I have not the data available to make the comparison, but I doubt if there is any road in the country which is traveled so much by the public, demanding a good road, which costs so little per mile. Here is also seen the impossibility of yielding to the demands of the tourists for more new roads leading to places of interest and beauty reached now only by trails, and not to be carried over twice some portion of the route now used. The amount now appropriated is the smallest amount with which the protection and present road condition in the park can be maintained, and if Congress intends to ratify and make good its dedication of the park to the people of the United States as a pleasuring ground for its benefit and enjoyment, it should yield to the demands of the people and make additional appropriation for the construction of new roads, which will add to their pleasure and benefit by opening new and wonderful phenomena and scenery.

NATURAL PHENOMENA OF THE PARK.

There does not seem to be any material change in these during the past year. Certain geysers and hot springs are noted as having become extinct, and others which were quiescent have again become active. The geysers which can be depended upon for regular displays are few in numbers, but constant observation of nearly all of them has enabled their time of eruption to be determined with sufficient accuracy to inform tourists, and give them an opportunity to witness their marvelous displays. There is unquestionably a close connection between temperature of water in the geyser and its time of eruption, certain geysers erupting when the water in their craters reaches a certain temperature, which varies for each geyser, and with the proper instruments for taking temperatures it will not be difficult to foretell the time of display of those geysers which are of greatest celebrity, and thus afford tourists the opportunity of seeing them. I will, if possible, determine the eruptive temperature of the most important geysers before the next tourist season, and will be enabled to give due notice of their eruption.

Mud Geyser has been exceedingly active for a period of two weeks this summer. It has for some years been a somewhat quiescent, boiling mud pool, but in the latter part of July it became more violent, and soon gave a remarkable display of its powers, throwing immense clots of mud 50 and 100 feet away from its crater. It covered the ground and trees in its vicinity and was in this state of eruption for two weeks. It gradually became quiet, but the contents of its crater have changed from boiling mud to boiling dirty water. The Black Growler, in Norris Basin, has also displayed remarkable activite this summer, and the noise of the escaping steam through its crater could be heard for miles; and at the base a mud spring has broken forth, which apparently seems to be growing larger. The Constant Geyser has within the past three weeks ceased to play, after many years of uninterrupted activity.

A new road, now completed, between Elk Park and Gibbon Meadow, on the road from Norris to Fountain, leads past two beautiful chocolate-colored geysers situated on opposite sides of the Gibbon River. They are immense cones. From the top of each a goodly stream of water continually boils and is ejected some feet in the air. The cascades and rapids along the road, which follows the river, are exceedingly picturesque and beautiful.

I forward herewith a map of the park and forest reserve, the same that accompanied the report of last year of the acting superintendent. Upon this I have marked the changes in road system of the park. They are as follows:

Main traveled road, cut off Elk Park to Gibbon Meadow, now notated as completed and used by park transportation companies; road along Madison River from falls of the Firehole River to boundaries of park completed and used by the Monida and Yellowstone Stage Company; road from Upper Geyser Basin to Lone Star Geyser, notated as being used by the same company; projected road from Canyon Hotel to Yancey's, notated so as to show the lower (or eastern) trail as the one recommended to be built, instead of the upper (or western) trail as shown on the map.

My efforts to preserve and maintain the park intact, and for its protection and improvement have been ably seconded by all officers of this command.

Supplementary reports will be submitted at the close of the season, when the weather prevents further work on the roads, and at such times during the coming winter as will keep the Department fully informed of the condition of affairs in the park.

I submit herewith the meteorological record as kept at Fort Yellowstone by the post surgeon.

Very respectfully,

JAMES B. ERWIN,
Captain, Fourth Cavalry, Acting Superintendent.

The SECRETARY OF THE INTERIOR,
Washington, D. C.

APPENDIX A.

RULES AND REGULATIONS OF THE YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., June 1, 1897.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, Revised Statutes United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot spring formations or to turn loose stock to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel.

4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care should be exercised at all times to avoid setting fire to the timber and grass, and anyone failing to comply therewith shall be peremptorily removed from the park.

5. Hunting or killing, wounding or capturing, of any bird or wild animal, except dangerous animals, when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden by law. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grading of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior.

9. No drinking saloon or bar room will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than $1,000 or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

CORNELIUS N. BLISS,
Secretary of the Interior.

INSTRUCTIONS TO PERSONS TRAVELING THROUGH YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
OFFICE OF SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., June 20, 1897.

The following instructions, for the information and guidance of parties traveling through the Yellowstone Park, having received the approval of the Secretary of the Interior, are published for the benefit of all concerned.

(*1*) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs particular attention must be directed to the extinguishment of fires in the decaying mold. Such material frequently smolders for days and then breaks out into dangerous conflagration. Fire may also be extinguished, where water is not available, by a complete covering of earth, well packed down.

(*2*) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Camp grounds must be thoroughly cleaned before they are abandoned, and such articles as tin cans, bottles, cast-off clothing, and other débris must be either buried or taken to some place where they will not offend the sight.

(*3*) *Bicycles.*—Many of the horses driven in the park are unused to bicycles and liable to be frightened by them. The greatest care must, therefore, be exercised by their riders. In meeting teams, riders will always dismount and stand at the side of the road—the lower side if the meeting be on a grade. In passing teams from the rear, riders will ring their bells as a warning and inquire of the driver if they may pass. If it appear from the answer that the team is liable to be frightened, they may ask the driver to halt his team and allow them to dismount and walk past.

Riders of bicycles are responsible for all damages caused by failure to properly observe these instructions.

(*4*) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No fish should be caught in excess of the number needed for food.

(*5*) *Dogs.*—When dogs are taken through the park they must be prevented from chasing the animals and birds or annoying passers-by. To this end they must be carried in the wagons or led behind them while traveling, and kept within the limits of the camps when halted. Any dog found at large in disregard of this section will be killed.

(*6*) *Grazing animals.*—Only animals actually in use for purposes of transportation through the park can be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose in the roads.

(*7*) *Miscellaneous.*—The carving or writing of names or other things on any of the mileposts or signboards, or any of the seats, railings, or other structures, or on the trees, will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

(8) Willful disregard of these instructions will result in the ejection of the offending person or persons from the park.

JAMES B. ERWIN,
Captain, Fourth Cavalry,
Acting Superintendent of the Yellowstone National Park.

INSTRUCTIONS FOR STATIONS, MAY, 1898.

OFFICE OF SUPERINTENDENT YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., May 30, 1898.

GENERAL INSTRUCTIONS.

It is the duty of the stations to see that all the rules and regulations and the instructions to persons traveling through the park are complied with. Parties violating any of these rules or instructions will be promptly placed under arrest and reported to headquarters. If the station is not in telegraphic communication with headquarters the offending persons may be brought in to the nearest telegraph station, where report of the case will be promptly made. Frequent patrols will be

made into all the territory belonging to the station for the observation and protection of the game and forests. Particular attention will be paid to the prevention and extinguishing of fires, and when any fire is discovered that can not be controlled by the station an immediate report will be made to headquarters.

When the country is so dry that there is danger of fires along the road, the road will be patrolled every morning.

Each noncommissioned officer will be held responsible for the proper policing of his station and of the ground in its vicinity, and all men on station must, except when scouting, wear the proper uniform and must always be neat and clean. All refuse and slops from camp will be buried.

One man must always be left at the station.

Persons carrying firearms or traps through the park must always have a written permit. This permit must be presented at each station passed and must be carefully scrutinized by the man in charge of the station at the time. If it appears that no undue advantage has been taken of the permit, and if the seals are intact and secure, the permit will be indorsed on the back. If the bearer of the permit appears to have violated the conditions thereof, to have unreasonably delayed between stations, he will be held and the case reported at once to the acting superintendent.

Pack trains entering the park may be given a permit by the noncommissioned officer in charge of a station to come in, traveling by wagon roads only, to the nearest station on their route where there is a commissioned officer. Pack trains will not be allowed off the wagon road without permission in writing from a commissioned officer. Persons in charge of pack trains will be instructed that all vehicles have the right of way over pack trains, and that they will be held responsible for interfering with the progress of wagons or frightening their horses.

All noncommissioned officers in charge of stations will send in to the quartermaster on the 15th and last days of each month all receipts for forage furnished and to their troop commander all receipts for meals.

All stations where a register is kept will forward with their report at the end of each month the number of persons who have been registered during the month. The exterior stations will give the number entering and the number leaving the park by their station. Transcript from register of camping parties will not be sent in.

JAMES B. ERWIN,
Captain, Fourth Cavalry, Acting Superintendent.

SPECIAL INSTRUCTIONS.

Norris.—The territory belonging to this station in summer is that drained by Solfatara Creek, the Gibbon from the head of Virginia meadows to the head of the Gibbon Canyon, Obsidian Creek to the Crystal Springs, and by Straight and Winter creeks.

Road patrols will extend to the Crystal Springs and 5 miles towards the canyon.

This station is charged with the protection of the Norris Basin, and from the time when the first coaches come in until the last one has left one man must remain on the formation. A man must also be on the formation whenever camping parties are there.

The beaver in the neighboring streams must be carefully watched, the same as in winter.

Grand Canyon.—The teritory includes the headwaters of the Gibbon to Virginia Meadows and all the country that drains into the Yellowstone from the Mud Geyser to and including Tower Creek. The beaver in Cascade Creek and lake must be carefully watched. Road patrols will extend 6 miles towards Norris and to the Mud Geyser.

Lake.—The territory includes all the country draining into the Yellowstone River, above Mud Geyser, and all draining into the lake from Beaverdam Creek to Rocky Point. Road patrols will extend from Mud Geyser to 10-mile post towards the Thumb.

All parties passing this station will be registered in the book provided for that purpose.

Upper Basin.—The territory includes all the country that drains into Shoshone Lake from DeLacey Creek to its outlet on the west; all the country that drains into the Firehole River to a point opposite the 5-mile post towards Fountain.

Road patrols will extend 9 miles towards the Thumb and 5 miles towards the Fountain.

A principal and very important duty of this station is to protect the formation from injury or defacement.

All parties who camp at or in the vicinity of the Upper Basin will be registered in the book provided for that purpose.

Thumb.—The territory includes all the country that drains into the lake from Rock Point to Beaverdam Creek; also the country that drains into Shoshone Lake from DeLacey Creek to its outlet into Lewis River above the falls, and into Heart Lake. While tourists are at the Thumb, one man will be kept on the formation to enforce the regulations.

Road patrols will extend 9 miles towards the Lake Hotel, 10 miles towards the Upper Basin, and to Lewis Falls.

JAMES B. ERWIN,
Captain, Fourth Cavalry, Acting Superintendent.

OFFICE OF SUPERINTENDENT YELLOWSTONE NATIONAL PARK,
Mammoth Hot Springs, Wyo., May 30, 1898.

SPECIAL INSTRUCTIONS.

Parties carrying firearms or traps and desiring to enter the park will be closely questioned as to their intentions and purposes. If they intend to leave the park by the same station by which they entered, they will be required to leave their arms at the station. A receipt will be given, and the arms will be cared for and returned to the owners on their exit from the park.

If the parties desire to pass through the park and leave by some other station, the noncommissioned officer will, if he is satisfied that they are reliable parties, seal their guns and issue a permit on the blank forms provided for that purpose. He will instruct the holder of the permit that he must present it at every station he passes for examination and indorsement, and that any violation of the terms of permit or any undue advantage taken of it will result in his arrest and trial.

When parties leave the park, the permit will be taken up by the last station along the route. It will be properly indorsed and sent to headquarters at the end of the month.

The seals will be removed from the guns when permit is taken up.

JAMES B. ERWIN,
Captain, Fourth Cavalry, Acting Superintendent.

APPENDIX B.

List of parties holding license to conduct camping business.

No.	Name.	Residence.	Number of vehicles.	Duration.
1	G. W. Torbert	Cinnabar, Mont	4	May 26 to Oct. 1, 1898.
2	W. E. Knowles and H. M. Gore.	do	5	May 27 to Oct. 1, 1898.
3	W. S. Dixon	Livingston, Mont	3	May 28 to Oct. 1, 1898.
4	Charlie T. Smith	do	3	Do.
5	Alfred Lycan	Bozeman, Mont	5	Do.
6	W. J. Kupper	Cinnabar, Mont	4	May 30 to Oct. 1, 1898.
7	Adam Gassert	do	5	June 6 to Oct. 1, 1898.
8	S. M. Fitzgerald	Gardiner, Mont	5	Do.
9	B. S. Thresher and O. L. Bishop.	Butte, Mont	5	June 16 to Oct. 1, 1898.
10	A. L. Roseborough	Gardiner, Mont	4	June 27 to Oct. 1, 1898.
11	Marshall Bros	Livingston, Mont	5	June 30 to Oct. 1, 1898.
12	E. V. Blankenship	Bozeman, Mont	5	Do.
13	A. W. Chadbourne	Cinnabar, Mont	5	July 7 to Oct. 1, 1898.
14	Shaw & Powell	Livingston, Mont	4	Aug. 1 to Oct. 1, 1898.
15	A. D. Creasey	Bozeman, Mont	3	Aug. 9 to Oct. 1, 1898.
16	Wm. Wells	Wells P. O., Wyo	2	Sept. 3 to Oct. 1, 1898.
17	G. W. Wakefield	Livingston, Mont	2	Sept. 13 to Oct. 1, 1898

APPENDIX C.

List of registered guides.

No.	Guide.	Residence.	Number of animals.	Duration.
1	William Hague	Fridley, Mont	30	May 31 to Dec. 31, 1898.
2	Richard Randall	Gardiner, Mont	30	July 13 to Dec. 31, 1898.
3	Henry George	Cinnabar, Mont	20	Do.
4	John P. Bean	Bozeman, Mont	20	July 16 to Dec. 31, 1898.
5	James H. Tappan	Dubois, Wyo	20	July 17 to Dec. 31, 1898.
6	Taswell Woody	Pleasant Valley, Y. N. P	30	July 19 to Dec. 31, 1898.
7	Burton Harris	Elk P. O., Wyo	15	July 20 to Dec. 31, 1898.
8	Oliver Paulsell	Red Lodge, Mont	10	July 25 to Aug. 15, 1898.
9	W. T. Hall	Gardiner, Mont	16	July 26 to Dec. 31, 1898.
10	Geo. W. Reese	Cinnabar, Mont	20	Aug. 6 to Dec. 31, 1898.
11	Elwood Hofer	Gardiner, Mont	40	Aug. 10 to Dec. 31, 1898.
12	W. T. Hall	do	40	Do.
13	Frank Randall	do	10	Aug. 22 to Oct. 30, 1898.
14	Geo. Albert Pfohl	Fridley, Mont	16	Aug. 23 to Oct. 31, 1898.
15	O. Paulsell	Red Lodge, Mont	10	Aug. 23 to Sept. 15, 1898.
16	B. D. Sheffield	Livingston, Mont	30	Aug. 23 to Dec. 31, 1898.
17	Frank M. Scott	Gardiner, Mont	15	Aug. 25 to Oct. 31, 1898.
18	Henry Kitchens	Absarokee, Mont	12	Aug. 29 to Oct. 31, 1898.
19	William Nichols	Cooke City, Mont	13	Do.
20	David Black	Chico, Mont	12	Aug. 31 to Nov. 30, 1898.
21	Fountain Black	do	12	Do.
22	Wm. A. Donahoo	Gardiner, Mont	13	Sept. 1 to Oct. 15, 1898.
23	Wm. Wells	Wells P. O., Wyo	20	Sept. 3 to Dec. 31, 1898.

APPENDIX D.

LEASES IN YELLOWSTONE NATIONAL PARK.

Yellowstone Park Transportation Company: Mammoth Hot Springs, 2 acres; Norris, 2 acres; Fountain, 1 acre; Upper Geyser Basin, 2 acres; Lake, 2 acres; Canyon, 1 acre, building, etc., for the accommodation of employees and stock.

Yellowstone Park Association: Mammoth Hot Springs, Mammoth Hotel and commissary; Mammoth Hot Springs, Cottage Hotel and Mammoth Barn; Fountain (Lower Basin), cottages; Fountain, Fountain Hotel and barn; Lake, Lake Hotel and barn; Canyon, Canyon Hotel, pump house, and barn; Upper Geyser Basin, hotel and barn (not yet constructed).

Yellowstone Lake Boat Company: Near Lake Hotel, 2 acres; Frank Island, 2 acres; Stevensons Island, 2 acres; Dot Island, 1 acre; West Thumb, 1 acre; Ways, 2 acres; Southeast Arm, 2 acres; Dot Island Game Corral, 2 acres; to be located by superintendent, 6 acres.

William W. Humphrey and F. Jay Haynes: At Upper Geyser Basin, Thumb, Lake Outlet, Grand Canyon, Norris Geyser Basin, Mammoth Hot Springs, not to exceed 1 acre at each point; building, etc., for the accommodation of employees and stock. (Assignments not yet made.)

Jennie H. Ash: Mammoth Hot Springs, dwelling, post-office, and store.

Ole A. Anderson: Mammoth Hot Springs, dwelling and store.

John F. Yancy: Pleasant Valley, hotel.

F. J. Haynes: Mammoth Hot Springs, studio; Upper Geyser Basin, studio.

Henry E. Klamer: Upper Geyser Basin, dwelling and store.

APPENDIX E.

Statement of cases brought before Hon. John W. Meldrum, United States commissioner, since the 1st day of November, 1897.

January 11.—United States *v.* Thomas J. Miner. Charge: Violation of the provisions of the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park, and to punish crimes in said park, and for other purposes." Trial had February 8. Defendant ordered to pay a fine of $50 and costs.

February 12.—United States *v.* James Herzer. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant not yet arrested; could not be found within the district of Wyoming.

June 27.—United States *v.* James Courtenay and Richard Murray. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Separate trial of Richard Murray. Defendant fined $50.

NOTE.—The complaint in this case was filed on the 29th day of October, 1897. Original warrant returned December 18, 1897, "not served." Defendants not found within district of Wyoming. Defendant Murray was brought before the commissioner, by virtue of alias warrant issued June 27. Defendant Courtenay not yet arrested.

July 12.—United States *v.* A. K. Crawford. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant not yet arrested; could not be found within the district of Wyoming.

August 26.—United States *v.* A. V. Scott. Charge: Violation of the provisions of the act of Congress approved May 7, 1894. Defendant ordered to pay a fine of $25 and costs.

NOTE.—The papers in the cases of United States *v.* James Herzer and A. K. Crawford, respectively, have been transmitted to the United States attorney for the district of Montana, with request that he cause such action to be taken as will place the defendants within the jurisdiction of the authorities of the district of Wyoming.

APPENDIX F.

REPORT OF LIEUTENANT LINDSLEY, FOURTH CAVALRY, ON TRIP TO THE EASTERN FOREST RESERVE.

FORT YELLOWSTONE, WYO., *August 30, 1898.*

SIR: I have the honor to submit the following report of my trip to the eastern forest reserve.

Pursuant to your verbal instructions, I left this post on Sunday the 7th instant with Private Miller, of D Troop. I had ten days' rations, and took two pack mules. Went over the old stage-robber trail. Saw 22 antelope, including 5 kids, on Blacktail Deer Creek; also saw numerous signs of elk and bear. I camped on the extreme head of Lava Creek.

On the 8th I showed Private Miller the cabin on Lava Creek, came by Grebe Lake, then over to Cascade Lake, and down Cascade Creek to the Canyon, then by the wagon road to Mud Geyser. Saw many tracks of elk and deer. The beaver in Cascade Lake and Creek are undisturbed and are doing new work.

On the morning of the 9th Private Rompre, of H Troop, reported to me from the Lake Station and accompanied me. I crossed the river 6 miles from the Lake Hotel, went up Pelican, and by Turbid Lake, and up Bear Creek to the forks, where I camped. Saw 3 elk on the Pelican and plenty of elk and deer signs all the way. Saw a beaver house in Turbid Lake, but had no time to examine it.

On the 10th I crossed the divide by Jones Pass and camped on Jones Creek, under Silver Tip Peak. Private Rompre returned to his station from Bear Creek. Saw 7 elk and plenty of elk and bear signs.

On the morning of the 11th the mules had gone back on the trail, and I sent Miller back after them and remained in camp all day.

On the 12th I rode to the mouth of Jones Creek and examined the trails up and down the North Fork of Stinking Water River. Saw no sign of horses, except the trail of the party which preceded me over Jones Pass a few days before. They had gone down the river. Saw one deer track on the North Fork. Saw where some one had camped last spring at the mouth of Jones Creek and had smoked an elk. On the way back to camp saw where an elk and a lynx had died last spring, probably a natural death, as no parts of the carcass had been removed. Miller returned at 7 p. m. with the mules, which he had found at the lake.

On the 13th I went down to the Stinking Water and followed up it to the mouth of Torrent Creek and camped. Examined the trail to Lamar River. It has not been used recently.

On the 14th I followed the North Fork to its head and crossed the divide to the head of Galena Creek and down it to the head of Sunlight Creek and camped. On the divide I found some shaft timber cut and piled up ready for use. Also found a cabin, not used recently, which I afterwards learned belongs to a Mr. Hughes. On Galena Creek saw a tunnel and a cabin and stable. At the mouth of Galena Creek is another cabin and a fence across the valley. Both sides of the divide are very steep, and a good trail has been built at considerable expense apparently. On the Sunlight side the trail is dug out of slide rock for a large part of the way and it zigzags down the mountain side at a very practicable grade for pack animals. I found a Mr. Campbell and Mr. Vickers camped at the cabin on Sunlight. Last fall

Mr. Campbell located a claim in the gulch between Dyke and Black mountains and built the cabin and fences. He has now brought Mr. Vickers, of Red Lodge, in to inspect the prospect and test the ore, with an idea of building a smelter in case they have sufficient pay ore to warrant it. They had 24 horses, only six of them packed, and intended to stay a month or more.

The old Frenchman of Snake River fame, De Voe, had just come in from Red Lodge and camped near Vickers and Campbell. He had 6 horses (4 packs) loaded with rations, bear traps, etc.; also had 5 stag and bloodhounds. All the men had rifles. De Voe said he had a prospect on Copper Creek and was going to stay in camp a few days and pack some of his ore in for Mr. Vickers to test. Then he wanted to come through the park and go south into Wyoming for the winter. He said he wintered last winter on Wapiti Creek (Elk Fork he calls it), and trapped some bear this spring. I learned next day that he was never known to prospect; that he did winter on Wapiti Creek, and went out about July 1, through Sunlight, with several heads, and went to Red Lodge. Everyone I saw complains of him and his dogs. They say the dogs kill many elk and run the rest out of the country. I was told by Mr. Green, who lives near the junction of the two forks of Stinking Water, that there were dead elk all along the North Fork and its tributaries, killed last winter by De Voe's dogs.

On the 15th I went down Sunlight to the "Basin" and camped at Tighe's ranch. Remained there on the 16th and saw every ranch and nearly every settler in the reserve. Learned that Mr. Webster, for whom I was looking, has not come in that way.

On the 17th I went on down Sunlight to Dead Indian Creek and up it to near its head.

On the 18th I went down Rattlesnake to the North Fork and camped at Mr. Green's ranch.

On the 19th I crossed over to the South Fork and came up it by Marquette and Ishawood post-offices and camped at Col. W. F. Cody's ranch, at the mouth of Ishawood and close to the Forest Reserve line. At Mr. Green's I learned that no party had gone up the North Fork this year and only the party from the park had come down.

On the 20th I went up the South Fork to Captain Darley's ranch, making the acquaintance of all the settlers on the way.

On the 21st I went on up as far as McLaughlin's ranch (Valley Home). This is the farthest settler up the South Fork except Mr. Davis, whom I met at Captain Darley's. I then returned to Cody's ranch and camped.

On the 22d I came up Ishawood to near its head.

On the 23d I crossed the Ishawood Pass and came down Pass Creek to the Thorofare and down it to the Yellowstone.

On the 24th I came to the mouth of the Upper Yellowstone and camped, and on the 25th came to the Lake Hotel and camped near the station, ferrying my stuff over the river and swimming my stock.

On the 26th I laid over to let my stock rest, and went to the Thumb by boat for my mail. Found the station there in excellent condition as to police and neatness. On returning to Lake, I saw a big volume of smoke rising from behind Flat Mountain, which I reported to the superintendent by wire. In obedience to your telegraphic orders to locate the fire and find out its size, I then went in the Government boat, with Sergeant Welch and Private Montgomery and Mr. Bowers, to the south arm of the lake. We ran on a bar at Frank Island and had to go ashore in a rowboat, which I had procured from Mr. Waters, and cut some big levers; then got out, waded on the bar, and pried her off. When we reached the south arm it was too dark to go further, so we camped.

The 27th I climbed on foot to the top of the divide, but could not satisfactorily locate the fire from there, so I put the boat into the Flat Mountain arm, made a landing and we climbed Flat Mountain, but had to go on to within 2 miles of Heart Lake before we could locate the fire, on the point between Barlows Fork and Heart River. It rained very hard in the morning, and when I saw the fire it was smoking but evidently not burning very hard. It was over a mile long, however. We returned to the boat and then to the hotel. It rained very hard this evening.

On the 28th I came from the lake to the Canyon, and on the 29th reached this post, having been out twenty-two days, on ten days' rations, plus what I had bought en route.

I saw several elk tracks on Ishawood, perhaps half a dozen, and on Thorofare and the Yellowstone River and Lake saw plenty of elk signs. Saw several moose tracks along the Upper Yellowstone, Thorofare, and the Lake. The beaver dams in Thorofare are deserted, as they are in Beaverdam and Trappers Creek, and all the creeks. There are some bank beaver in the Yellowstone which have escaped the trappers who despoil the colonies in the smaller streams. This is an ideal moose, elk, and

beaver colony, and if a station were put at the mouth of Thorofare, and that country protected, all the streams would soon fill up with beaver, and the moose would increase.

The necessity for a station there and one on Falls River has long been recognized, and now, with the increase in the troops, it will perhaps be practicable.

I saw no game whatever in the reserve, and, except one deer track and a few elk, saw no game signs except in the Thorofare country.

Following is a list of settlers in Sunlight Basin, within the forest reserve:

Gust Lafond, single, claimed a ranch last fall. There was a cabin on the place; has made no improvements and does not live on his claim; has 6 or 8 head of cattle.

Mrs. Chatfield. Mr. Chatfield located on Sunlight previous to 1891. He died last winter and his widow occupies the place. She has 33 head of cattle and a few horses; has a fair cabin, corrals, and stable, and has a meadow under fence and ditch. Mr. Chatfield also had a number of mining claims in the reserve.

Charles Hoff located previous to 1891; has 9 head of cattle and 20 horses; has comfortable cabin and good corrals and stable; has a meadow under fence and ditch; has no mining claims.

John Hughes has been in the country a long time and has several mines up the creek. Took up a ranch and built a house last winter. Has no cattle; about 25 work horses.

Jack Tighe located his ranch in April, 1891, and left for the winter, coming back in 1892, since when he has resided permanently on his place. Tighe has about 6 head of cattle and a few horses; has a pasture under fence and will turn it into a meadow as soon as he completes his ditch. Has a comfortable cabin and fair sheds and corrals. Is married. Cuts no hay. Works for other people some, in mines.

Williard Ruscher took up claim last year. Has cabin; poor fences; no stock; cuts no hay. Works in mines and on ranches.

Henry Delaney built cabin last winter; single; has no stock and no fence; works for other people.

John R. Painter has family. Came from Philadelphia three years ago. Located last summer close to line of forest reserve. Has two good cabins and good stable. Has nearly completed a good house of peeled logs, two stories, five rooms on ground floor, shingle roof, large windows, matched floor, etc. Has three miles or more of good wire fence around field which he uses now as a pasture. Intends to get water on it next year and then cut hay on it. Has several cattle, horses, and mules. Came here to engage in mining. Mr. Painter has purchased the interests of Messrs. Malin and Pratt, Baronette and Miller, also part of the interests of Mr. Hughes, and has an entire or a controlling interest in some half dozen mines—the Silver Tip, Evening Star, Rainbow, Pilgrim, Novelty, and others. He has expended considerable money in building roads and trails and developing his mines. He told me he has invested about $25,000 in the forest reserve. He has shipped about 27 tons of ore, which averaged at the smelter $152 per ton, and is now getting out six cars of ore to ship to Omaha. This ore he packs on mules about 10 or 12 miles to the mouth of Sulphur Creek, then hauls 55 miles in wagons to Red Lodge, whence it goes over the Northern Pacific Railroad to Billings and down the Burlington to Omaha. The cost of working, transporting, and mining the ore he reports to be about $50, leaving him $100 per ton profit. He is working several men in the Evening Star at present, besides the men engaged in transporting the ore to the railroad. He intends to put in a stamp mill and concentrator on the Silver Tip property next year.

Following is a list of settlers on Shoshone River, and within the reserve:

A. E. Swanson settled in 1895; fair log house and stable; 3 miles of fence; 1½ miles of ditch; 12 acres hay; 15 in wheat and oats; 4 head of cattle, 20 horses.

W. H. Jordan settled in 1897; has fair log cabin and stable; 2 miles wood fence; 2 miles ditch; cuts 30 tons of hay; 7 acres in grain; 36 cattle and 7 horses.

John Davis settled in May, 1891; log house and 2 stables; 1½ mile fence; ¾ mile ditch; cuts 15 tons hay; 7½ acres grain; 7 cattle, 8 horses; is a Welchman and miner.

Duff Putnam settled in 1896; 1-room cabin; 2 stables; 160 acres under fence; 300 yards ditch; cuts 10 tons hay; 12 head cattle, 4 horses.

Capt. Henry A. C. Darley is an ex-officer of Royal Artillery; bachelor; settled in 1897; has fair 3-room house and fair stable; 1 mile wire fence, 1½ miles wood fence; 1½ miles ditch; cuts 50 tons hay; has small field oats this year; 80 cattle and 30 horses; hunts for sport only; has 2 mining claims.

Mrs. E. C. Brown settled April 21, 1894; has fair cabin, several rooms; old, fair stable; 2 miles wood fence; 1 mile ditch; cuts 30 tons hay; has a little barley; 24 cattle, about 100 horses; her son, Nona Brown, is a professional guide, but disclaims to be a hunter, and his neighbors say he is not a hunter.

E. M. Brown settled April 21, 1894; has fair cabin and stable; 2 miles wood fence; 1 mile ditch; cuts 30 tons hay; has no cattle; 4 horses.

James McLaughlin settled in 1889 or 1890; has 3 good cabins, a stable; about 1 mile good fence; 1½ miles ditch; cuts 40 tons hay, and has a fine vegetable garden; 30 head cattle, 9 horses; is a hunter and trapper, but of late devotes his time to ranching and sometimes guides parties to the park; bears a fine reputation among all his neighbors as being absolutely reliable and honest, intelligent, and industrious.

John Hurst; single; settled in 1894; has a good cabin and corral; no stable; 1½ miles wire fence; ½ mile ditch; cuts 10 tons hay, and has 8 horses; bears a good reputation; Captain Darley gives him a high recommendation as a guide and hunter; is a young man, and seems honest and very intelligent.

Many of these ranches, both on South Fork and on Sunlight, were located and occupied previous to the dates given above, upon which they were first occupied by their present occupants. These two valleys are the only parts of the reserve which are suitable for agriculture or stock raising. In both places stock winters with very little feed and the snow fall is light.

In view of the improvements put there in good faith by settlers, it seems best to me to allow these valleys to be used, as they are of no use as a reserve.

In the Shoshone mining region many claims have been located and represented, some for several years, but no real development work has been done on any of them. In the Sunlight district considerable development has been done, and I would recommend that suitable regulations be promulgated, allowing settlers to use any suitable lands for agricultural and stock-raising purposes, allowing prospecting and mining operations to be carried on, and the necessary amount of timber to be used, under wise regulations which would prevent waste or spoliation of the forests; that the reservation be not added to the park, except such part of it in the south as drains into the Yellowstone River; that the game laws of Wyoming be enforced in the reserve; and that either a detail of soldiers be made to enforce these regulations or that the reserve be placed under charge of proper civil officials for its administration and protection.

Very respectfully,

ELMER LINDSLEY,
First Lieutenant, First Cavalry.

The ACTING SUPERINTENDENT YELLOWSTONE NATIONAL PARK,
Present.

APPENDIX G.

SCHEDULE MONIDA AND YELLOWSTONE STAGE COMPANY.

Both ways via Monida:

First day.—Leave Monida 8.30 a. m., arrive Shambow 12.30 p. m.; leave Shambow 1.30 p. m., arrive Dwelle's 5.30 p. m.

Second day.—Leave Dwelle's 8 a. m., arrive Fountain Hotel 11.30 a. m.

Third day.—Leave Fountain Hotel 8 a. m., arrive Upper Basin 10 a. m.; leave Upper Basin 4.30 p. m., arrive Fountain Hotel 6 p. m.

Fourth day.—Leave Fountain Hotel 7.30 a. m., arrive West Bay 1 p. m.; leave West Bay 3 p. m., arrive Lake Hotel 5 p. m.

Fifth day.—Leave Lake Hotel 9 a. m., arrive Canyon Hotel 12 noon.

Sixth day.—Leave Canyon Hotel 9.30 a. m., arrive Norris 12 noon; leave Norris 1.30 p. m., arrive Mammoth Springs 4 p. m.

Seventh day.—Leave Mammoth Springs 8 a. m., arrive Norris 12 noon; leave Norris 1.30 p. m., arrive Dwelle's 5.30 p. m.

Eighth day.—Leave Dwelle's 8 a. m., arrive Shambow 12 noon; leave Shambow 1 p. m., arrive Monida 6 p. m.

In Monida and out via Cinnabar:

First day.—Leave Monida 8.30 a. m., arrive Shambow 12.30 p. m.; leave Shambow 1.30 p. m., arrive Dwelle's 5.30 p. m.

Second day.—Leave Dwelle's 8 a. m., arrive Fountain Hotel 11.30 a. m.

Third day.—Leave Fountain Hotel 8 a. m., arrive Upper Basin 10 a. m.; leave Upper Basin 4.30 p. m., arrive Fountain Hotel 6 p. m.

Fourth day.—Leave Fountain Hotel 7.30 a. m., arrive West Bay 1 p. m.; leave West Bay 3 p. m., arrive Lake Hotel 5 p. m.

Fifth day.—Leave Lake Hotel 9 a. m., arrive Canyon Hotel 12 noon.

Sixth day.—Leave Canyon Hotel 9 30 a. m., arrive Norris 12 noon; leave Norris 1.30 p. m., arrive Mammoth Springs 4 p. m.; leave Mammoth Springs 6.30 p. m., arrive Cinnabar 8 p. m.

Direct connections made at Cinnabar with Northern Pacific Railroad for St. Paul.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.

SEPTEMBER, 1897.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	75	42	33	SW.	.....	
2	81	42	39	S.	.....	
3	59	52	7	NW.	.....	
4	64	44	20	SW.	.....	
5	77	49	28	S.	.....	
6	77	45	32	SW.	Trace	
7	79	58	21	S.	.....	
8	55	47	8	NW.	.....	
9	53	26	27	NW.	.....	
10	71	33	38	S.	.....	
11	71	39	32	S.	.....	
12	66	46	20	NW.	Trace	
13	75	37	38	S.	Trace	
14	56	41	15	S.	Trace	
15	51	41	10	S.	.....	
16	61	28	33	NW.	.....	
17	74	33	41	S.	.....	
18	72	35	37	NW.	.....	
19	75	35	40	S.	.....	
20	74	37	37	S.	.....	
21	78	37	41	S.	.....	
22	74	42	32	S.	.....	
23	70	45	25	NW.	.....	
24	73	37	36	SW.	.....	
25	76	37	39	S.	.....	
26	76	41	35	S.	.....	
27	73	46	27	S.	.....	
28	66	43	23	SW.	0.27	Rain.
29	67	38	29	S.	.....	
30	72	42	30	SW.	.04	Rain.
Total	2,091	1,218	873	.....	.31	
Mean	69.70	40.60	29.10	S.	.....	

Maximum, 81° on 2d instant; minimum, 26° on 9th instant; mean, 55.15°; total precipitation, 0.31 inch; prevailing winds, south.

OCTOBER, 1897.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	56	40	16	SW.	0.27	Rain and sleet.
2	48	37	11	S.	.16	Snow (first storm season).
3	56	30	26	SW.	.....	
4	62	34	28	SW.	.....	
5	68	34	34	W.	.....	
6	72	35	37	SW.	.09	Rain.
7	64	49	15	NW.	.....	
8	54	34	20	S.	.....	
9	58	33	25	NW.	.....	
10	56	28	28	SW.	.....	
11	55	41	14	NW.	.....	
12	54	35	19	NW.	.08	Rain.
13	38	27	11	N.	.67	Snow.
14	32	23	9	N.	.15	Snow.
15	33	19	14	NW.	.....	
16	38	14	24	W.	.....	
17	44	20	24	SW.	.....	
18	48	27	21	S.	.....	
19	58	26	32	S.	.....	
20	54	31	23	S.	.....	
21	63	33	30	SW.	.....	
22	44	40	4	N.	.04	Rain.
23	48	36	12	S.	.06	Rain.
24	50	38	12	W.	.....	
25	38	30	8	N.	.20	Snow.
26	33	29	4	NW.	.....	
27	41	16	25	W.	.....	
28	55	26	29	S.	.....	
29	59	29	30	S.	.....	
30	52	30	22	SW.	.....	
31	55	26	29	SW.	.....	
Total	1,586	950	636	.....	1.72	
Mean	51.16	30.64	20.51	SW.	.....	

Maximum, 72° on 6th instant; minimum, 14° on 16th instant; mean, 40.90°; total precipitation, 1.72 inches; prevailing winds, southwest.

NOVEMBER, 1897.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	39	29	10	S.	.....	
2	59	30	29	S.	.....	
3	56	31	25	N.	0.38	Snow.
4	39	37	2	N.	.....	Earthquake at 2.30 a. m.
5	34	14	20	W.	.....	
6	33	22	11	S.	.20	Snow.
7	31	15	16	N.	.10	Snow.
8	25	11	14	N.	.15	Snow.
9	27	7	20	W.	.....	
10	42	18	24	S.	.....	
11	44	30	14	S.	.....	
12	47	34	13	S.	.19	Rain.
13	52	43	9	S.	.11	Rain.
14	48	35	13	W.	.30	Snow.
15	28	20	8	N.	.....	
16	22	9	13	NW.	.....	
17	34	10	24	SW.	.....	
18	49	30	19	S.	.....	
19	47	38	9	S.	.....	
20	54	40	14	S.	.55	Snow.
21	40	16	24	NW.	.40	Snow.
22	33	6	27	N.	.....	
23	37	21	16	SW.	.....	
24	45	33	12	N.	.....	
25	38	23	15	NW.	.05	Snow.
26	31	13	18	S.	.....	
27	26	21	5	S.	.30	Snow.
28	24	6	18	N.	.15	Snow.
29	26	1	25	S.	.10	Snow.
30	35	21	14	S.	.....	
Total	1,145	664	481	.....	2.98	
Mean	38.16	22.13	16.03	S.	.....	

Maximum, 59° on 2d instant; minimum, 1° on 29th instant; mean, 30.15°; total precipitation, 2.98 inches; prevailing winds, south.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

DECEMBER, 1897.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	30	15	15	.....	.....	
2	28	7	21	S.	.....	
3	23	— 5	28	S.	.....	
4	29	11	18	N.	.....	
5	30	19	11	SW.	0.05	Snow.
6	37	23	14	W.	.....	
7	35	29	6	SW.	.10	Snow.
8	36	25	11	S.	.45	Snow.
9	27	19	8	S.	.....	
10	31	19	12	S.	.....	
11	31	18	13	SW.	.....	
12	32	23	9	S.	.....	
13	33	14	19	S.	.10	Snow.
14	30	16	14	S.	.....	
15	0	— 5	5	N.	.....	
16	6	—19	25	N.	.....	
17	16	— 4	20	SW.	.....	
18	17	3	14	S.	.....	
19	18	4	14	S.	.....	
20	13	1	12	NE.	.....	
21	18	3	15	S.	.....	
22	25	7	18	S.	.....	
23	29	5	24	S.	.....	
24	27	19	8	S.	.....	
25	29	17	12	S.	.....	
26	31	15	16	S.	.....	
27	34	25	9	S.	.....	
28	37	30	7	N.	.10	Snow.
29	37	31	6	SW.	.....	
30	23	15	8	SW.	.....	
31	15	— 6	21	NW.	.....	
Total	807	374	433	.....	.80	
Mean	26.03	12.06	13.96	S.	.....	

Maximum, 37° on 6th, 28th, and 29th instant; minimum, —19° on 16th instant; mean, 19.04°; total precipitation, 0.80 inch; prevailing winds, south.

JANUARY, 1898.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	25	3	22	S.	.....	
2	39	9	30	NW.	.....	
3	36	25	11	S.	.....	
4	37	15	12	SW.	Trace	
5	32	25	7	SW.	.....	
6	34	25	9	S.	.....	
7	32	20	12	SW.	0.01	Snow.
8	23	15	8	S.	.10	Snow.
9	23	13	10	S.	.20	Snow.
10	17	1	16	NW.	.....	
11	15	3	12	SW.	.....	
12	16	6	10	S.	.....	
13	18	4	14	S.	Trace	
14	15	— 6	21	NW.	.....	
15	25	10	15	N.	.....	
16	22	12	10	S.	.....	
17	21	4	17	SE.	.....	
18	24	5	19	SW.	.....	
19	27	15	12	S.	.....	
20	23	5	18	SW.	.....	
21	20	— 3	23	S.	.....	
22	17	8	9	N.	.....	
23	18	— 1	19	SW.	.....	
24	10	—20	30	N.	.....	
25	8	—15	23	N.	.....	
26	9	— 6	15	N.	.....	
27	19	3	16	NW.	.....	
28	23	— 6	29	SW.	.....	
29	26	5	21	N.	.....	
30	30	13	17	S.	.....	
31	33	9	24	SW.	.....	
Total	717	310	511	.....	.31	
Mean	23.12	10.00	16.48	SW.	.....	

Maximum, 39° on 2d instant; minimum, —20° on 24th instant; mean, 14.72°; total precipitation, 0.31 inch; prevailing winds, southwest.

FEBRUARY, 1898.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	32	10	22	S.	.....	
2	31	5	26	S.	.....	
3	31	18	13	SW.	0.01	Snow.
4	30	19	11	S.	Trace	
5	39	19	20	S.	.....	
6	37	32	5	S.	.....	
7	40	31	9	SW.	.....	
8	39	22	17	SW.	.....	
9	26	7	19	S.	.....	
10	34	12	22	N.	.....	
11	34	13	21	S.	.....	
12	36	23	13	S.	.....	
13	33	21	12	SW.	.....	
14	41	29	12	S.	.10	Snow.
15	38	33	5	S.	.....	
16	37	16	21	SW.	.80	Snow.
17	13	1	12	NW.	.10	Snow.
18	20	3	17	N.	.....	
19	29	8	21	N.	.....	
20	38	19	19	S.	.....	
21	39	20	19	S.	.20	Snow.
22	28	5	23	SW.	.....	
23	32	2	30	N.	.....	
24	45	9	36	NW.	.....	
25	35	21	14	S.	.....	
26	39	13	26	SW.	.....	
27	45	12	33	SW.	.....	
28	42	23	19	S.	.....	
Total	963	446	517	.....	1.21	
Mean	34.39	15.92	18.46	S.	.....	

Maximum, 45° on 24th and 27th instant; minimum, 1° on 17th instant; mean, 25.15°; total precipitation, 1.21 inches; prevailing winds, south.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

MARCH, 1898.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	40	26	14	N.	.....	
2	44	24	20	S.	.....	
3	39	27	12	SW.	.....	
4	37	25	12	NW.	.....	
5	41	17	24	S.	.....	
6	43	20	23	SW.	.....	
7	45	23	22	SE.	0.20	Snow.
8	40	18	22	NW.	.....	
9	23	17	6	N.	.....	
10	25	2	23	N.	.....	
11	26	1	25	NW.	.10	Snow.
12	32	2	30	SW.	Trace	
13	32	19	13	NW.	.30	
14	27	13	14	NW.	.....	
15	29	7	22	N.	.....	
16	24	0	24	N.	.....	
17	32	— 2	34	N.	.....	
18	26	7	19	N.	Trace	
19	25	6	19	NW.	Trace	
20	30	19	11	S.	.30	Snow.
21	26	— 4	30	N.	.50	Snow.
22	16	—22	38	NW.	.....	
23	25	6	19	S.	.....	
24	35	18	17	S.	.....	
25	32	28	14	NW.	.....	
26	21	5	16	NW.	.....	
27	25	— 7	30	S.	.....	
28	29	6	33	NW.	.....	
29	29	— 1	30	SW.	.....	
30	32	13	19	SW.	.....	
31	34	13	21	SW.	.....	
Total	964	326	638	.....	1.40	
Mean	31.09	10.51	20.58	NW.	.....	

Maximum, 45° on 7th instant; minimum, —22° on 22d instant; mean, 20.80°; total precipitation, 1.40 inches; prevailing winds, northwest.

APRIL, 1898.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	44	6	38	SW.	.....	
2	51	27	24	SW.	.....	
3	31	24	7	NW.	0.10	Snow.
4	38	18	20	SW.	.....	
5	46	12	34	S.	.....	
6	50	22	28	SW.	.....	
7	38	25	13	SW.	.05	Snow.
8	42	25	17	S.	.....	
9	54	31	23	SW.	.....	
10	59	32	27	SW.	.....	
11	51	31	20	SW.	.30	Snow.
12	54	25	29	SW.	.....	
13	59	34	25	SW.	.....	
14	65	35	30	SW.	.....	
15	68	34	34	SW.	.....	
16	58	36	22	NE.	Trace	
17	47	35	12	NE.	Trace	
18	48	28	20	NE.	.....	
19	52	24	28	NE.	.....	
20	53	31	22	N.	.....	
21	54	37	17	NE.	.30	Snow.
22	52	35	17	NW.	.....	
23	54	32	22	SE.	.....	
24	62	28	34	SE.	.....	
25	67	34	33	NW.	.....	
26	68	43	25	NW.	.....	
27	52	30	22	W.	.....	
28	59	27	32	SW.	.....	
29	55	30	25	NW.	.....	
30	42	28	14	NW.	.20	Snow.
Total	1,573	859	714	.....	.95	
Mean	52.43	28.63	23.80	SW.	.....	

Maximum, 68° on 15th and 26th instant; minimum, 6° on 1st instant; mean, 41.03°; total precipitation, 0.95 inch; prevailing winds, southwest.

MAY, 1898.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	38	26	12	NW.	Trace	
2	35	24	11	N.	Trace	
3	40	25	15	N.	.....	
4	44	25	19	NW.	Trace	
5	54	23	31	SW.	Trace	
6	59	30	29	SW.	.....	
7	54	39	15	W.	.....	
8	59	30	29	NW.	.....	
9	65	30	35	W.	.....	
10	70	35	35	W.	.....	
11	62	43	19	SW.	.....	
12	58	37	21	N.	.....	
13	65	35	30	SW.	.....	
14	65	34	31	SW.	.....	
15	61	34	27	NW.	0.15	Rain.
16	56	37	19	N.	.....	
17	51	40	11	N.	.30	Rain.
18	54	37	17	SE.	.15	Rain.
19	52	37	15	SW.	.10	Snow.
20	47	30	17	NW.	.....	
21	58	32	26	SW.	.....	
22	62	40	22	NW.	.....	
23	58	40	18	NW.	0.45	Rain.
24	48	37	11	N.	.....	
25	55	40	15	NE.	.....	
26	59	42	17	NE.	.....	
27	73	39	34	NW.	.....	Rain.
28	58	41	17	SW.	.45	
29	58	36	22	NW.	.10	Rain.
30	56	38	18	SW.	.25	Rain and sleet.
31	52	29	23	SW.	.....	
Total	1,726	1,065	661	.....	1.95	
Mean	55.67	34.35	21.32	SW.	.....	

Maximum, 73° on 27th instant; minimum, 23° on 5th instant; mean, 47.51°; total precipitation, 1.95 inches; prevailing winds, southwest.

METEOROLOGICAL REGISTER, FORT YELLOWSTONE, WYO.—Continued.

JUNE, 1898.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	61	39	22	SW.	0.32	Rain.
2	53	35	18	NW.	.....	
3	46	31	15	NW.	.....	
4	48	36	12	NW.	.15	Rain.
5	52	34	18	NW.	.....	
6	56	34	22	NW.	.02	Rain.
7	64	32	32	NW.	.....	
8	69	35	34	NW.	.....	
9	(a)	38	.....	NW.	.....	
10	(a)	39	.....	NW.	.....	
11	(a)	40	.....	W.	.50	Rain.
12	(a)	40	.....	NW.	.....	
13	(a)	43	.....	NW.	.20	Rain.
14	(a)	45	.....	W.	.15	Rain.
15	(a)	39	.....	SW.	.....	
16	(a)	52	.....	S.	.....	
17	80	49	31	S.	.....	
18	87	49	38	S.	.....	
19	87	55	32	S.	.....	
20	76	49	27	SE.	.....	
21	74	39	35	S.	.....	
22	83	47	36	S.	.....	
23	71	53	18	S.	.35	Rain.
24	66	46	20	SW.	.45	Rain.
25	68	50	18	SW.	.....	
26	71	35	36	S.	.....	
27	80	46	34	SW.	.....	
28	76	46	30	NW.	.....	
29	73	34	39	NW.	.38	Rain.
30	70	42	28	N.	.15	n.
Total	.....	1,252	.....	.....	2.67	
Mean	.....	41.70	.....	NW.	.....	

Maximum, not known; minimum, 31° on 3d instant; mean, not known; total precipitation, 2.67 inches; prevailing winds, northwest.

JULY, 1898.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	50	39	11	N.	.....	
2	67	32	35	W.	.....	
3	76	40	36	SW.	.....	
4	80	47	33	SW.	.....	
5	81	53	28	SW.	.....	
6	78	44	34	SW.	.....	
7	81	49	32	SW.	0.15	Rain.
8	80	47	33	SW.	.30	Rain.
9	79	45	34	W.	.....	
10	86	51	35	SW.	.....	
11	87	49	38	SW.	.....	
12	77	57	20	S.	.60	Rain.
13	79	49	30	SW.	.....	
14	86	52	34	SW.	.....	
15	86	52	34	SW.	.....	
16	86	51	35	SW.	.....	
17	77	48	29	SW.	.....	
18	66	39	27	W.	.....	
19	70	43	27	W.	.....	
20	80	39	41	SW.	.....	
21	77	52	25	SW.	.....	
22	81	45	36	SW.	.10	Rain.
23	72	47	25	SW.	.....	
24	81	40	41	SW.	.....	
25	87	46	41	SW.	.....	
26	82	49	33	S.	.....	
27	81	45	36	W.	.....	
28	83	47	36	W.	.....	
29	81	46	35	N.	.....	
30	72	45	27	NW.	.....	
31	76	39	37	N.	.....	
Total	2,425	1,427	998	.....	1.15	
Mean	78.23	46.03	32.20	SW.	.....	

Maximum, 87° on 11th and 25th instant; minimum, 32° on 2d instant; mean, 62.13°; total precipitation, 1.15 inches; prevailing winds, southwest.

AUGUST, 1898.

Date.	Maximum.	Minimum.	Range.	Winds.	Precipitation.	Remarks.
1	73	48	25	N.	.....	
2	78	40	38	N.	.....	
3	84	47	37	N.	.....	
4	81	47	34	N.	.....	
5	67	49	18	N.	0.10	Rain.
6	74	37	37	N.	.....	
7	79	42	37	NW.	.....	
8	84	46	38	N.	.....	
9	85	49	36	N.	.....	
10	84	54	30	E.	.....	
11	84	50	34	SW.	.....	
12	89	54	35	SW.	.....	
13	74	50	24	SW.	.....	
14	70	50	20	SW.	.25	n.
15	76	53	23	W.	.30	n
16	72	49	23	SW.	.15	Rain.
17	78	44	34	SW.	.....	
18	84	42	42	SW.	.....	
19	86	42	44	SW.	.....	
20	87	49	38	SW.	.....	
21	83	55	28	SW.	.....	
22	74	44	30	NW.	.....	
23	77	40	37	SW.	.....	
24	84	41	43	SW.	.....	
25	83	42	41	SW.	.....	
26	88	45	43	NW.	.....	
27	85	58	27	SW.	.50	Rain.
28	80	48	34	NW.	.....	
29	76	45	31	SW.	.15	Rain.
30	68	50	18	SW.	.45	Rain.
31	68	43	25	SW.	.15	Rain.
Total	2,455	1,451	1,004	.....	2.05	
Mean	79.19	46.81	32.39	SW.	.....	

Maximum, 89° on 12th instant; minimum, 37° on 6th instant; mean, 63°; total precipitation, 2.05 inches; prevailing winds, southwest.

a Thermometer broken.

Diary of Yellowstone Park scouts, winter season of 1897–98.

[George Whittaker, 1897.]

November 6.—Left Mammoth Hot Springs for Norris; arrived at Norris 7.30 p. m. Saw 5 elk on Swan Lake Meadow, 2 coyotes at Willow Park. Weather cloudy and cold.

November 7.—Left Norris station at 9.30 a. m., and proceeded to Mud Geyser; arrived Mud Geyser 6 p. m. Saw 25 elk 1 mile west of Canyon Junction, large band near Sulphur Mountain, 172 on east side of Yellowstone River, opposite mouth of Alum Creek; 1 red fox and 3 coyotes at Trout Creek bridge. Weather very cold and snowing heavy.

November 8.—Left Mud Geyser station and crossed Yellowstone River in a boat. Went on foot for about 4 miles east, making about 8 miles in all. Saw 1 deer track, 2 red foxes. Weather storming and cold.

November 9.—Left Mud Geyser station with Sergeant Simons and Private Akers and proceeded to Pelican Creek cabin. Saw 1 elk. Weather, blinding snowstorm all day.

November 10.—Left cabin with Sergeant Simons, dismounted, for Pelican Cone and Mush Kettles on Pelican Creek; made a circuit of about 10 miles; almost impossible to travel with horses. Weather stormy. Saw 1 elk.

November 11.—Left cabin with Sergeant Simons, mounted, for head of Astringent Creek and White Lake. Left Private Akers at cabin until we returned. Proceeded about 4 miles on horses, then proceeded on foot to south end of White Lake; could not get there with horses on account of deep snow. Saw no sign of any kind all day. Snow between 2 and 3 feet deep on the head of Astringent Creek. Weather stormy.

November 12.—Left cabin for head of Raven Creek, mounted; proceeded as far as beaver dams, where snow was too deep to travel with horses. Saw some fresh beaver sign. Decided to go back to Mud Geyser station for grain and rations and return in three or four days. No sign of any other game. Weather, snowing and raining; snow going very fast.

November 13.—Left Mud Geyser station for Trout Creek cabin, with snowshoe rations for cabin; took Sergeant Simons and Private Akers to assist me in putting wood in cabin, and show them route to Thumb in winter time. Saw no sign of game in Hayden Valley, something very unusual at this time of the year. Weather cold and stormy.

November 14.—Left Trout Creek cabin for Fountain station; decided to take Sergeant Simons and Private Akers with me and return to Mud Geyser from Fountain and go back to Pelican as soon as I get through at this place. Had intended to go up to Bear Parks and Shoshone Geyser Basin and take Corporal Holman and one private with me, but corporal informed me that he had just returned from Bear Parks five days ago and saw no sign of any game in there, and had also tried to get to Shoshone Geyser Basin with horses, and the deep snow drove him back. There being nothing further to detain me here, I decided to return to Mud Geyser to-morrow and try the Pelican Creek again. Left Trout Creek cabin at 11.45 a. m. and got to foot of Mary's Mountain about 1 p. m. After we got to Snow cabin at foot of mountain I saw two very fresh tracks, should say half hour old; examined them closely and saw they were buffalo; about half mile farther came onto two more tracks, which proved to be buffalo also, but not so large as first two, and one more half mile east of Magpie Creek; thought best not to pursue them; presume they were somewhere back of Fountain Hotel all summer and are just moving into Hayden Valley. Some beaver sign in Nez Perce Creek. Weather very cold and stormy.

November 15.—The stock being very tired, and it being very cold and stormy, I decided to lay over to-day and return to Mud Geyser to-morrow; and by the time I got a telephone message in to post about buffalo it was 11 a. m. before I got back to station, almost too late to start for Mud Geyser. Requested Corporal Holman to ride up to Twin Buttes and see if there were any buffalo sign there. He returned and reported nothing but elk sign and some beaver sign in Sentinel Creek. Weather cold and stormy.

November 16.—Left station for Mud Geyser station with Sergeant Simons and Private Akers via Marys Mountain. Arrived at station 4.30 p. m. Saw 15 elk on Nez Perce Creek at foot of Mary's Mountain. Observed that Corporal Holman is very attentive to the duty assigned him to prevent poaching in the park. Weather cloudy and cold.

November 17.—Stayed at Mud Geyser station to start for Pelican Creek to-morrow; there being some work to do pertaining to my stock and saddles, was too late to make a start to-day. Weather clear and cold.

November 18.—Left Mud Geyser station with Sergeant Simons and Private Murphy for Pelican Creek cabin, intending to go up to Mirror Plateau and head of Flint Creek. Arrived at cabin at 4 p. m. Saw 14 swan on Yellowstone River above ford. Weather cloudy.

November 19.—Left cabin for Mirror Plateau, but found, after proceeding about 5 miles, the snow so deep and hard that could not go there, so tried to go up to summit of the mountain and go down Willow Creek, but could not get there, so had to turn back. Could do nothing with horses on account of snow. Saw two buffalo tracks on Astringent Creek; quite a number of elk sign on Pelican Creek. Weather cold and stormy.

November 20.—Left cabin for Mud Geyser station with intention of returning to post, it being useless to try to do anything with horses. Saw 27 swan on river above ford. Weather stormy and cold.

November 21.—Left Mud Geyser for Norris; arrived at Norris at 5.30 p. m. In my experience with the detachment at Mud Geyser I found that they were preventing any poaching being done in their district. A band of about 200 elk crossed the river above Alum Creek, just as I came by. Weather cloudy and cold.

November 22.—Left Norris station for Fort Yellowstone; stayed back with teamster to remove large rock out of road, but could not remove it; tried to pull it out, but could not. Fixed telephone wire at Crystal Spring. Saw a band of about 200 elk at Swan Lake; about 75 elk in the timber about 1 mile post from post; 15 deer at Golden Gate. Weather cloudy.

[James G. Morrison, 1897.]

November 24.—Left the post with Privates McReynolds and Miller to go over on the Gallatin. On account of the deep snow we got no farther than the pocket on Fawn Creek, where we camped. Saw about 750 elk; also numerous signs of beaver on the Gardiner River and Fawn Creek. Distance traveled, about 12 miles.

November 25.—Took back trail down Fawn Creek about 4 miles, thence south along Quadrant Mountain to Indian Creek and up it about 4 miles to snowshoe shack, where we camped. Saw about 150 elk; many signs of beaver on this creek. Distance traveled, about 15 miles.

November 26.—Remained in camp, scouting up Indian Creek. No signs of game. Distance traveled, about 10 miles.

November 27.—Proceeded to the post. Distance, 12 miles.

[George Whittaker, 1897.]

November 23 to 25.—Doing duty at Fort Yellowstone.

November 26.—Received order to go to Mud Geyser with pack mule and four pairs snowshoes.

November 27.—Left Fort Yellowstone for Norris; left post at 3 p. m , arrived Norris 7.30 p. m. Weather cold and storming. Saw 19 elks 6 miles south of post; also 2 deer and 3 coyotes 6½ miles south of post.

November 28.—Left Norris 10.30 a. m. for Mud Geyser; arrived Mud Geyser 4.30 p. m. Took Sergeant Welsh and Private Helm to assist me to Canyon Junction, but finding my horse and mule and Sergeant Simons's horse very tired, decided to have them go to Mud Geyser with me and return the following day via Canyon Hotel to see if it was possible to make a trip due north to Fort Yellowstone from Grebe Lake. Saw a band of elk on east side of Yellowstone River between Trout Creek and Mud Geyser; presume there were about 70 of them. Weather clear, until evening it began to snow.

November 29.—Left Mud Geyser on return trip to Norris with Sergeant Welsh and Private Helm. Went to Canyon Hotel to see how deep snow was, but found it too deep to go to Grebe Lake with horses. Went to hotel and sent Captain Erwin, the assistant superintendent of the park, the following message over telephone:

"Trip must be made on snowshoes. Leave Canyon; will be at Norris about 4 p. m. If any other orders call Norris.

"WHITTAKER, *Scout.*"

Did not arrive at Norris until 5 p. m. Weather forenoon cloudy, afternoon snowing very hard. Hard for stock to travel and make time.

November 30.—Stayed at Norris to wait for wagon to come with snowshoes. During the day I took Sergeant Welsh and Private Hemstead with their skis and broke the trail as far as Virginia Meadows; made a circuit of about 7 miles; found it very hard snowshoeing; the snow was very soft and our skis would sink about 6 to 8 inches. Wagon arrived at 5 p. m. with skis for Norris station and myself and Scout Malin. Weather very stormy.

December 1.—Sergeant Welsh, Scout Malin, and myself left Norris on snowshoes for Canyon Hotel at 9.45 a. m., arrived at Canyon at 3.30 p. m.; found snowshoeing fairly good for time of year. Depth of snow from 18 to 30 inches between Norris and Canyon Hotel. One mountain lion track on Canyon road 1 mile east of Norris; one on sulphur beds 3 miles west of Canyon. Met lineman and Privates Murphy and Davis on their way to Norris to get some mail which was brought out on the

wagon yesterday; they return to Mud Geyser to-morrow. I sent my horses in from Norris by Private Hemstead. No game seen. Weather clear.

December 2.—Left Canyon Hotel with Sergeant Welsh and Scout Malin to make a trip to Grebe Lake, thence north to Fort Yellowstone, on snowshoes. Left Canyon Hotel at 8.35 a. m.; went up Cascade Creek to lake, thence to Grebe Lake; found all beaver had not been molested. Cut north from Grebe Lake and went to poachers' old cabin on the head waters of a tributary of Lava Creek. Saw no game. Snowshoeing was very easy to-day. Made about 10 miles from Canyon Hotel. Depth of snow, from 12 to 24 inches up to Grebe Lake; from there the snow was from 3 to 4 feet. Weather clear; 10 degrees below zero this morning at 6.30 o'clock.

December 3.—Left cabin with Sergeant Welsh and Malin at 7.30 a. m.; began to climb the divide and kept working along the top until we came to Storm Peak, then began to descend to Lupine Creek; when we reached the creek bed, we found it very hard shoeing on account of lack of snow. On the divide from the cabin all the way to Lupine Creek the snow was about 4 to 5 feet deep. No sign of anybody in that district. There seems to be a great many pine marten around Storm Peak and on the head waters of Lupine Creek; great many elk sign near Wraith Falls. I think we made about 25 miles on our trip for to-day. Weather clear and cold. Came in on foot from top of East Gardiner grade; arrived at post about 7.30 p. m. Saw 3 deer and 1 elk near Blacktail Creek; saw tepee near Storm Peak, but nothing in it. From the divide above cabin could see the Tower Creek country, but saw no sign of anything there.

[N. J. Malin, 1897.]

October 8.—Left Fort Yellowstone with Corporal Ornis and Private Canovan at 2.30 p. m.; arrived at Blacktail Creek at 5 p. m., about 8 miles east from fort. Saw 1 blacktail buck and 2 coyotes on the road.

October 9.—Went on; followed down Blacktail Creek near the mouth; beaver houses and dams had not been disturbed on the creek. I showed Ornis and Canovan the trail to cross the river at mouth of Blacktail; also lower and middle trail going to Cooke City. Camped at Yancey's about 5 p. m. No game seen. Weather very stormy; snow and wind.

October 10.—Left camp at Yancey's at 7.30. Crossed main Yellowstone on Baronett's bridge; then went up Lamar River about 1 mile and forded; then cut across divide to trail on north side of the river, leading to Cooke City, about 2½ miles from Slough Creek; then turned northwest to Buffalo Plateau and made camp near Montana-Wyoming line on a branch of Hell Roaring Creek, 4 p. m. Corporal Herb and Private Hardin came to our camp near 5 p. m.—trailed us from where we hit the trail, on north side of Yellowstone, which leads to Soda Butte and Cooke City.

October 11.—Left camp with Ornis, Herb, and Canovan at 8.30 and traveled east to the pass between Hell Roaring and Buffalo Fork of Slough Creek. Found snow about 18 inches deep and crusted hard, so it was hard for horses to travel; then traveled north to what is considered near the north line of the park. Saw 1 blacktail buck and 4 bull elk; also beaver dam and house and fresh work of the beaver in the creek, which was a small branch of Hell Roaring. Herb sent Harding back to station. Snowing and cold; windy.

October 12.—Traveled north with Ornis, Herb, and Canovan, to north line near Hell Roaring Creek. Saw 5 bull elk on trip. Got back to camp at 5 p. m. Found Harding in camp.

October 13.—Ornis, Herb, and Harding scouted up the main Hell Roaring Creek; reported when returning no sign of game or poachers. I went west on Buffalo Plateau; no sign of game or poachers. Snowing and rain.

October 14.—All left camp at 10.30 a. m. and traveled main trail to Soda Butte. Got to station at 5 p. m.

October 15.—Left station at 10 a. m. with Ornis, Herb, and Bremer. Arrived at upper end of Alastin meadows at 5.30 p. m., about 2 miles south of the line of the park. Richard Randall and Roseborough in the party; they had written permit to carry their guns and to pack meat through the park to Soda Butte, thence along the road to Gardiner. Saw near 1,000 elk on Warm Spring Creek; also a very large band on Specimen Mountain.

October 16.—I took Herb, Bremer, Ornis, and Canovan as near north boundary line as I could judge from the line of Montana and Wyoming. Randall and Roseborough went across the line hunting. Clear and fine.

October 17.—All scouted up Slough Creek to where the line crosses the mountains. Clear and fine.

October 18.—Canovan and myself went across the point of the mountain to Buffalo Fork of Slough Creek to near line of park. The other men went up Slough Creek outside the park, hunting. Ornis killed a blacktail deer. Clear and fine.

October 19.—Started back to Soda Butte Station and arrived at 3.30 p. m. Roseborough and Randall also went to the Butte. Warm; thawing, so the travel was muddy.

October 20.—All remained at the station. Raining all day. Blane and Hoppe captured negro supposed to be the negro who broke jail in Deadwood, Dak.

October 21.—All left station for Cache Creek; followed up the main creek to right-hand fork, thence up the right-hand fork to the canyon, then up the divide to near the line of the park. Camped at 5 p. m. Herb, Ornis, Canovan, and Edwards, Randall, and Roseborough started east, hunting. I went on top of the mountain, so I could see Saddle Mountain and Baronet Peak, to determine, as near as possible, where the line would cut the mountain and creek, and found that we were camped in the park about three-quarters of a mile, as near as I could tell. Herb and Edwards, while hunting, came across the corner of the timber reserve, and found the line of the park; also trees and monuments showing the line. The line is also blazed as far as followed north and south. No sign of game in the country.

October 22.—Started back to station; arrived at 3 p. m. Lots of elk on bottom between Lamar River and Soda Butte Creek. I saw several coyotes and some mountain-lion tracks. Warm and pleasant.

October 23.—Randall, Ornis, Canovan, and I left station at 10 a. m. and arrived at camp on Slough Creek at 4.50 p. m. Saw several thousand elk between Soda Butte and Slough Creek. Both sides of Lamar River alive with elk; as near as I could judge, must have been 7,000.

October 24.—All hunted north of line for camp meat, but nothing outside of the park lines but bulls. Found on my way to camp an old camp where poachers had been camped. Near the line they had left their camp outfit, cooking utensils, also three quarters of elk, hung up in the trees, about 500 yards from their camp.

October 25.—All scouted the country between the north line and Slough Creek to see if we could find any more signs of poachers, but found no camps made lately. The beaver in Slough Creek have not been disturbed.

October 26.—Left camp on Slough Creek and followed it down through the canyon to or near the mouth. Crossed the Lamar River and went to Yancey's place and camped for the night. Several hundred elk at mouth of Slough Creek; also, several hundred on Specimen Mountain and Little Specimen Creek. Ornis killed 1 coyote, and we saw lots of signs and several coyotes.

October 27.—Left camp at 8.30 and arrived at Fort Yellowstone at 2.30. Saw no game, but a large herd had come off of Mount Washburn and crossed the road, going towards the Yellowstone River, near Devils Gut.

November 30.—Left post for Norris Station at 11 a. m. with Sergeant Bernstein, mounted, and Donehue as teamster. Saw a band of near 200 elk on Swan Lake Flat; 2 coyotes on road near Crystal Springs; 24 geese on lake at 3-mile post from Norris. Met syndicate team, with driver and Andy Wold, on road to Springs. Arrived at Norris Station at 4.30 p. m. Ten to 12 inches of snow beyond Crystal Springs to Norris.

December 1.—Left Norris, with Whittaker and Sergeant Welsh, for Canyon on snowshoes at 9.45; arrived at the Canyon Hotel at 3.30. Snow would average about 20 inches deep.

December 2.—Left Canyon Hotel with Whittaker and Sergeant Welsh. Traveled up Cascade Creek to the lake, thence across to Grebe Lake; then took up the trail that Reeb and Smitzer took after the robbery, to the cabin built by poachers. Cascade Creek and Lake frozen and covered with snow, so could tell nothing regarding the beaver in the creek and lake. No sign of game or poachers; snow average about 3½ feet deep.

December 3.—All left cabin at about 7.30 a. m.; traveled to top of divide looking into Tower Creek, then followed along the head of the divide to the head of Lupine Creek, then down the creek to the open country, then across to the main road leading from Springs to Cooke City; arrived at Fort Yellowstone at 8 p. m.; snow 4 to 5 feet deep in mountains, very little in the open country.

December 5.—Made trip along north line back of Cinnabar, then followed around the foot of mountains to target ground, then down old road to Gardiner. Game seen on trip, about 250 antelope in foothills, 3 blacktail deer near old brickyard, 8 bull elk above target ground, 2 live and 8 dead coyotes.

[George Whittaker, 1897.]

December 4.—Reported to the commanding officer for duty.

December 5 and 6.—Doing post duty.

December 7.—Left Mammoth Hot Springs for Yancey's with saddle horse and 2 pack mules. Saw 2 mountain sheep on east end of Mount Everts; 4 elk on Blacktail, 82 one mile west of Yancey's, and 2 deer same place. Weather stormy.

December 8.—Left Yancey's and proceeded to Soda Butte Station. Saw large herd of elk near hot spring, 2 miles southeast of Yancey's—about 75 in the herd; 3 small herds about 1 mile north of the junction of Yellowstone and Lamar rivers, 27 in one herd, 64 in next one, and I will venture to say there were over 300 in the other herd.

Twelve bull elk near the Junction Butte; 59 on the southeast side of Junction Butte; 33 near Cedar Ford of Lamar River; large herd near the mouth of Slough Creek—can say there were between 200 and 300; large herd on the east side of Slough Creek—between 50 and 75; 4 deer on Little Specimen Creek; 11 elk on Specimen divide; large herd on west side of Druid Peak of about 100; some scattered all the way from Amethyst Creek to Soda Butte. Corporal Herb and 2 privates absent on patrol duty on Slough Creek. Weather stormy. Snowed about 5 inches of snow during the night. Saw 7 coyotes near carcass of dead elk, 1 mile from station.

December 9.—Left station on snowshoes for trip up Opal Creek, then over to head of Flint Creek, but broke one of my snowshoes at foot of Specimen Ridge, so had to return to station. Was too late to make the trip by the time I had secured new shoes, so had to abandon it. Corporal Herb promised to make the trip by next Tuesday. Saw 14 elk opposite station. Weather cloudy.

December 10.—Left Soda Butte with Corporal Herb and Scout Malin for Hellroaring Creek. Saw about 700 elk near Junction Meadow; 200 on Slough Creek; about 1,000 scattered around between the outlet of Lamar River and Hellroaring Creek; also between 400 and 500 on east side of Hellroaring; some on west side also, but could not see them very well; should say there were about 150 of them. Camped on the State line near Hellroaring Creek. Saw 1 dead elk on Slough Creek and 6 coyotes eating on his carcass. The elk had evidently been run down and killed by the 6 coyotes last night. It was a last spring calf and was in good condition. Weather fair. No sign of anyone in the country we came over.

December 11.—Left camp with Corporal Herb and Scout Malin. Game seen to-day was 6 large herds of elk—2 herds on east side of Hellroaring creek, 3 herds on west side, and 1 herd on Blacktail Creek. It would be almost impossible to count them, but I will say there were at least 3,000 between Hellroaring and the mouth of Cottonwood Creek and 300 on Blacktail. Saw 3 white-tail deer near east side of Cottonwood Basin, 12 on Gardiner Grade, 1 mountain sheep near Cottonwood. No sign of anybody in the district.

Corporal Herb and his detachment keep a very close watch of that country. Corporal Herb came as far as Blacktail bridge, then left me and went to Yancey's. Malin left me at ford on Yellowstone River. Weather stormy. There were a great many fresh signs of beaver in Blacktail creek about 1 mile from outlet. Arrived at Fort Yellowstone at 4.45.

December 12.—Doing duty at Fort Yellowstone.

December 13.—Left post, mounted, with Private Dawson, of D Troop, and Private Martin, of H Troop, and 3 pack mules, for Fawn Pass. Proceeded as far as Golden Gate, where we were compelled to return to post on account of deep snowdrift in the gate, which was about 15 feet deep on the upper side and tapered down to 7 feet on lower side. Saw 10 deer at 3-mile post south of post. Weather very stormy.

December 19.—Left Fort Yellowstone with Scout Morrison and 4-mule team and driver at 8.10 a. m. for Norris. Had 4-mule team and 8 men to assist our team through the Snow Pass. After getting on the main road at Swan Lake found it fairly good traveling to Indian Creek; began to get very hard from there on; could not get farther than Crystal Spring on account of mules being tired; had to camp there for the night. Saw small herd of elk near the Snow Pass. Weather clear and cold.

December 20.—Left Crystal Spring cabin for the Canyon Hotel at about 8 a. m.; arrived at Norris for dinner. Left Norris at 2 p. m.; arrived at Canyon Hotel at 7.30 p. m. No game on road. Weather clear and cold.

December 21.—Left Canyon Hotel at 6.45 a. m., intending to go to Mud Geyser Station and secure the body of Private Davis, who was found frozen to death 10 miles from Lake Hotel on road to Thumb, and brought to Mud Geyser Station by Sergeants Simons and Welch and Private Akers. Found that Sergeants Simons and Welsh had tied the body up with canvas and had everything ready to start back to the Canyon Hotel after dinner. Left Mud Geyser at 1 p. m. with Scout Morrison, Sergeants Simons and Welsh and Private Hemstead to return to Canyon Hotel with body of Private Davis. Arrived at Canyon Hotel at 5 p. m. No game seen on road. Weather stormy in forenoon and clear in afternoon. Fairly good traveling for the team.

December 22.—Left Canyon Hotel at 7.25 a. m. for Crystal Spring; arrived at Norris for noon hour; left Norris 1.45 p. m.; arrived Crystal Spring at 5 p. m. Weather clear and cold.

December 23.—Left Crystal Spring with same party for Mammoth Hot Springs; left cabin at 7.04 a. m.; arrived Mammoth Hot Springs 11.55 a. m. Saw 17 elk near Snow Pass. Weather clear and cold. Depth of snow from Norris to Indian Creek about 2 feet; from Norris to Canyon 3 to 4 feet; from Canyon to Mud Geyser from 12 to 30 inches; all the snow is very soft.

December 24.—Left Fort Yellowstone to make a trip to Gardiner, Horr, and Aldridge; arrived at Gardiner; decided to remain over night. Weather cloudy.

December 25.—Left Gardiner City at 8.45 a. m., and proceeded to Horr. Stopped

two hours in Horr, then proceeded to Aldridge; arrived there 12.30 p. m. Weather cloudy.

December 26.—Left Aldridge and returned to Gardiner. Remained in Gardiner over night. Weather stormy.

December 27.—Left Gardiner; from Gardiner went up on Mount Everts; saw a great many elk and antelope up there; saw 6 mountain sheep also; weather cold and stormy; from Mount Everts returned to Fort Yellowstone; arrived at post at 5.30 p. m. On this entire trip I have gathered some information that sooner or later will lead to the arrest of some poachers.

December 31.—Left Fort Yellowstone, mounted, with privates Disbrow and Root, of H Troop. Proceeded as far as Snow Pass, mounted; then proceeded on skis up Glen Creek; then over the divide to head of Gardiner River, at foot of Electric Peak, and camped for the night. Saw 12 elk near head of Glen Creek. Weather clear and cold.

[Geo. Whittaker, 1898.]

January 1.—Left camp with same party for Mulharen Creek and Fish Lake. Camped on Fish Lake over night. Saw one fresh track of mountain sheep. Weather clear.

January 2.—Left Fish Lake at daybreak. Proceeded down Mulharen Creek one mile; then kept working along the park line, intending to go to head of Reese Creek, but Private Root broke one of his snowshoes when we were just opposite Aldridge, so I had to go to the nearest road, as we could not use our skis any more. Saw one old snow trail, which I presume was one week old or more. Came on to an old cabin, but it was empty and there had been nobody near it this winter. The cabin is in the park, but very near the line. Saw no game. Weather clear. We arrived at Mammoth Hot Springs at 2 a. m. on the morning of the 3d.

January 12.—Sergeant Wall, of H Troop, and Corporal Herb, of Soda Butte Station, and myself left Fort Yellowstone for main camp on Big Blacktail Creek. From post we went to first bridge on Gardiner River, then turned to the right and went up the old road to old coal mine. At the coal mine we saw 22 mountain sheep—7 rams and 15 ewes. I then sent Corporal Herb on top of Mount Everts, while Sergeant Wall and I patrolled along the cliffs at Eagles Nest; then went down as far as the Yellowstone River; then up the old Turkey Pen road to Blacktail. Saw 1 mountain sheep near old slaughterhouse on Turkey Pen road; about 20 antelope on Gardiner flat. Saw about 1,200 elk on Mount Everts; saw 21 deer scattered on Mount Everts. Corporal Ornes and Private Bremier left post with pack train with rations and forage for main camp. Found everything O. K. in camp. Weather clear and very cold. Saw one human foot track on Everts, but it was about four days old and was not very plain.

January 13.—Took Sergeant Wall and Corporal Ornes, mounted, and proceeded up Crevasse Creek to patrol that place and also measure the distance from park line to where Miner killed the elk, and found it was 235 yards due south of the line, as near as we could make it. Brought the head to camp to be sent to post as evidence against Mr. Miner. Saw 88 elk on east side of Crevasse Creek; 24 on head of Dry Gulch creek. Weather cloudy.

January 14.—Left camp with Sergeant Wall and Corporal Herb and 3 pack mules to go over to Buffalo Creek and remain there three days, if necessary. Sent Corporal Ornes into the post with 2 mules and letter to Captain Erwin, and elk meat and elk head of Mr. Miner's. Saw 48 elk on Dry Gulch Creek; 4 white-tail deer same place. Elk sign were very numerous on Crevasse Mountain. Weather clear. Went into camp on Buffalo Creek at 4 p. m. The snow is very deep on Crevasse Mountain.

January 15.—Stayed in camp until about 11 a. m., then took Sergeant Wall and rode out toward the park line. Just before we came to the line we found an elk, dressed and covered with a blanket, and there was a fresh track of a man leading into the park, but before we got there he had come out again and gone down towards Bear Gulch, but later on I saw him coming back. I had already found his camp and a man in it who said his partner was out hunting horses, so I sent Corporal Herb down to watch his partner, when he came in, and see what he had with him. At that time I saw a man moving along the cliffs near the Yellowstone River, so I watched him until I thought he was in the park, then went after him and arrested him for hunting in the park. It turned out to be Scotty Crawford, or "Horse-thief Scotty." Brought him into the post and Captain Erwin ordered him confined until we could find out for certain whether he was in the park or not. Weather cloudy and cold.

January 16.—Left post with Lieutenant Arnold and proceeded to Buffalo Creek, to determine whether Scotty Crawford was in the park when we arrested him. Found the stakes and monuments and found that he (Scotty) was all of 50 yards out, but found where he had been all of 400 yards inside, but when arrested he was about 100

yards outside the line. Returned to Fort Yellowstone at 7.30 p. m. Weather clear and cold.

January 17.—Stayed at Fort Yellowstone to meet Sheriff Young from Livingston. He arrived on the mail stage and said he would take charge of Scotty in Gardiner, to-morrow. Told him I would meet him at 10 a. m. Weather cloudy, not very cold.

January 18.—By order of Captain Erwin, took prisoner Crawford to Gardiner and turned him over to Sheriff Young, who told me to have all the witnesses to appear in Horr at 2 o'clock p. m. I sent Private Root up to camp and told him to have Sergeant Wall and Corporal Herb come down at once and move the camp down also. They arrived at 2 p. m. in Gardiner; then I took them to Horr. Scotty was tried and found "not guilty." Then his partner had Sergeant Wall arrested for taking his gun away from him, but Sergeant Wall was discharged. Justice Erret said he could not make a case of it. Returned to post at 8.45 p. m. Weather clear and very cold. Saw 8 mountain sheep at Eagles Nest.

January 19.—Stayed at post to wait for Private Carter to come in from camp on Blacktail Creek; he arrived at 8.45 p. m.

January 20.—Left post, mounted, and rode over to Mount Everts. Saw 8 mountain sheep on Mount Everts; about 600 elk there also; 6 deer same place. Saw where somebody had built a small footbridge across the Gardiner River, near the mouth. Returned to post at 5 p. m. Weather clear and cold.

January 21.—Left post with Private Weston, of H Troop, mounted. Proceeded from the bridge 2 miles north of post to the old coal bank on Mount Everts; from there to mouth of Gardiner River, thence along the north line of park as far as the Gassert ranche, thence back to Fort Yellowstone. Saw 11 mountain sheep on Mount Everts; about 200 antelope on Gardiner flat on east side of the Gardiner River; 4 whitetail deer near Government garden; 7 near post ice house; about 75 elk back of the Gassert ranche. Arrived at post about 5.30 p. m. Weather clear and cold.

January 22.—Remained in post until 6 p. m., then packed up 5 mules and left post with Sergeant Wall, Private Weston, and Private Martin to make a night camp on Mount Everts. Made camp on McMahon Creek at 8.10 p. m. Returned to post with Private Martin at 9.20 p. m. Left Sergeant Wall and Private Weston of H Troop in camp for six days, by order of Captain Erwin. Weather stormy and cold.

January 23.—Left post, mounted, with Private Carter and Private Martin, of H Troop, and Private Squires, of D Troop, and 5 pack mules to make a camp just back of Cinnabar. Left post at 10 a. m.; arrived in camp at 1 p. m. Sent Private Martin back to post with 3 mules. Saw about 150 antelope on Gardiner Flat; 6 elk back of Gassert ranche. Weather, clear and cold.

January 24.—Left camp with Private Carter to make a patrol up Reese Creek. Left camp at 8.30 a. m.; returned at 4.30 p. m. After going up Reese Creek to within one-half mile of park line saw some smoke away up in a little draw or ravine and concluded it was a poachers camp. I went about one-fourth mile inside the park; saw lots of game sign. Tried to ride to foot of Electric Creek, but snow was too deep for our horses; so returned to camp to go up and get Sergeant Wall and Private Weston to come down and help me investigate what that camp is doing there. Weather very cold all day, and clear.

January 25.—Left camp with Private Squires and went up to Sergeant Wall's camp to get him to come down and assist me for one day to investigate camp fire seen yesterday on Reese Creek. When I got to Gardiner I was informed that the sergeant had gone over to Buffalo Creek; so decided to send Private Squires back to camp and I would wait in Gardiner for the return of Sergeant Wall. Saw about 50 antelope on Gardiner Flat. Sergeant Wall arrived from Buffalo Creek at 6.30 p. m. Weather clear and very cold; 18 below zero at Gardiner. Remained with Sergeant Wall over night.

January 26.—Left Sergeant Wall's camp with Sergeant Wall and Private Weston. Proceeded to within 1 mile of Cinnabar, then fired two shots as a signal for Private Carter to meet us in Cinnabar. Left Cinnabar at 11 a. m. and went up Reese Creek as far as the park line, thence along said line to the foot of Electric Peak, thence back to where I saw the smoke on the 21st. Found that where we saw the smoke there is an old man, who built a log cabin last fall. He is mining coal. His cabin is about 150 yards from park line. Saw where two elk or deer had been killed and dragged down Reese Creek to Horr, but they were killed outside the park. Also found an old bear trap just outside the park; it has been there for about one year. There seems to be a great many fresh elk sign on Reese Creek and all of them are inside the park. Sergeant Wall and Private Weston returned to their own camp this p. m. Weather cloudy and cold.

January 27.—Sent Private Carter up to help Sergeant Wall take out the footbridge across the Gardiner River. Left camp about 2 p. m. and rode up to foot of Sepulchre Mountain to see if any poaching had been done there, but saw no sign of any having been done there. Saw 32 elk at foot of Sepulchre Mountain. Private Carter returned at 5.30 p. m. from Sergeant Wall's camp. He informed me that the foot-

bridge was taken out by Sergeant Wall and himself. He saw about 100 antelope on Gardiner Flat. Weather cloudy and very windy.

January 28.—Left camp with Private Squires to make a patrol up Reese Creek. As this is the day I am told to go to the post, thought that I had better make this patrol before going. Saw where an elk had been killed yesterday—but outside the Park—and dragged to Horr. Returned to camp about 5.30 p. m. and started to pack up and go to Sergeant Wall's camp and take him in also, but when we got there he had just returned from Buffalo Creek to look after Scotty's camp, and it being late and his stock tired, decided to remain there until morning and pull into the post by daybreak. My idea for doing this at night is to keep the hunting class of people thinking the camps were still out where they were. Weather clear and warm.

January 29.—Left camp on McMahon Creek with Sergeant Wall and Private Carter and Private Weston, of H Troop, and Private Squires, of D Troop, at 6.30 a. m. for Fort Yellowstone. Saw about 100 antelope on west slope of Mount Everts; 2 elk and 11 mountain sheep same place. Arrived at post at 8 a. m. Weather clear and very cold. Reported for duty at 9.30 a. m.

[Sergt. M. J. Wall, Troop H, Fourth Cavalry.]

January 23—Left camp at 10 a. m. Made a patrol on Mount Everts on the southeast slope, with Sergeant Wall and Private Weston. Game seen during patrol, about 100 head of elk and 6 blacktail deer. On the east of Mount Everts discovered an elk killed by a mountain lion, lying south from my camp. Saw tracks about one day old of man and horses passed by my camp and going towards Gardiner. Distance traveled, about 20 miles. Weather very cold.

January 24.—Left camp at 8.30 a. m. Patrolled Turkey Pen Trail with Private Weston. Game seen, 200 head of antelope on Gardiner Flat and 100 head of elk near my camp on the mountain east of Turkey Pen Trail. Saw 3 mountain sheep, and on south of trail saw 200 head of elk. On my return saw man's tracks leading from Gardiner to the ridge south of Yellowstone River; lost his trail in the rocks, and saw one mountain sheep, a ram, which looked to me as if he was hunted. Waited for signs of something to turn up and could find nothing, so returned to camp. Distance traveled, about 25 miles. Weather cold and clear.

January 25.—Left camp at 8.30 a. m. Made a patrol to Buffalo Creek with Private Weston. Game seen during patrol, 100 head of antelope on Gardiner Flat, east of Gardiner River. Found Crawford's camp on Buffalo Creek; went to his camp; spoke to him about the meat that was lying on trail; he said he knew nothing about it. Left his camp and went to the line. Found fresh tracks leading into the park; tracks that were made by a man's foot. Returned to McMahon Creek. Distance traveled, about 25 miles. Weather very cold.

January 26.—Left camp at 9 a. m. Made a patrol of the northern boundary with Scout Whittaker, Private Weston, and Private Carter. Game seen during patrol, about 150 head of antelope on Gardiner Flat and 15 head of elk outside of the line, northwest of Electric Peak. Found the camp that Scout Whittaker thought to be Bucher's was an old prospector's cabin. Was told by a rancher named McMahon that there was deer taken out on Monday (24th) by coal miners. Returned to McMahon Creek. Weather cloudy and cold. Distance traveled, about 20 miles.

January 28.—Left camp at 10 a. m. A patrol made to Gardiner River. Game on Gardiner Flat, 200 head of antelope. Met Private Carter on the side of river; had him help, myself, and Private Weston to cut the footbridge across the Gardiner River. After the bridge was cut went on Turkey Pen Trail. Saw 200 head of elk on east of trail. Returned to camp. Weather windy and cold. Distance traveled, about 15 miles.

January 28.—Left camp at 9.30 a. m. Patrol east of Mount Everts with Private Weston. Game seen on and around Mount Everts, about 600 head of elk and 6 blacktail deer on McMahon Creek, 1 mountain lion on the east side of Mount Evarts hunting elk, but when he saw us coming towards him he made for cover. After making this patrol went to Crawford's camp. Found fresh trails leading to the park; too late to follow them, so returned to camp. Weather clear and cold. Distance traveled, about 28 miles.

January 29.—Left camp at 6.30 a. m. Game seen on return to post, 100 head of antelope and 10 mountain sheep on south of Everts. Built a cabin on McMahon Creek.

[George Whittaker, 1898.]

January 4.—Left the post, mounted, and took in all the country at the foot of Sepulchre Mountain down as far as the corner of Chadbourne's ranche; then came back by way of Gardiner City. Saw 4 elk near the target range, about 110 antelope near Gardiner, 5 white-tail deer in Government garden, 12 near Government ice house. Weather clear and very warm.

January 5.—Left Fort Yellowstone with Corporal Ornes, of D Troop, and Private Carter, of H Troop, mounted; took five pack mules and proceeded to mouth of Blacktail Creek and went into camp there, so I could scout all the Crevasse Mountain country. Saw one man on snowshoes; sent Corporal Ornes after him; found out he was coming from Cooke City on his way to Gardiner. He had a pistol, but was sealed at Soda Butte. Saw a great many elk on Blacktail Deer Creek. The beaver in this creek have done a great deal of work, but are not working now. They have not been molested so far this winter. Weather cloudy and very wintry, but not cold.

January 6.—Left camp with Corporal Ornes and left Private Carter in camp; decided to go down the river to J. S. Knowles's ranch and see what was going on there, then go up on Crevasse Mountain and see if there is any poaching going on there; got to J. S. Knowles's cabin; found there was nobody at home; looked around for any elk meat that might be stored there, but found none. We then proceeded up Crevasse Creek; there we found two human footprints in the snow; followed them around to park line. The country was all pawed up by elk; there must have been hundreds of them in there last week, but they have been shot at and they have all moved back into Cottonwood Basin, except 11 that we saw to-day, and they ran for that place as soon as they saw us coming. After going to park line we began to circle a radius of 500 yards to see what those two men had been doing. I found where a quarter of elk had been cached overnight; I suppose it had been dragged there from the cache to Tom Miner's cabin. I followed the trail where it had been dragged, and it led to Tom Miner's door; am going back on the 8th to see just where it was killed; looked to-day as far as the park line, but could not find the carcass. Tom Miner told me, when I asked him who had dragged the meat, that he had, and that he was going to drag some more just as soon as he could get to kill one. My opinion is that he did not kill the elk, but somebody has killed several elk somewhere on Crevasse Creek and gave him the front quarters, for when I got to his cabin he was out and I looked into his meat house, but saw nothing but fore quarters and one old hind quarter of elk or deer; I did not take time to note which. Saw 3 whitetail deer near J. S. Knowles's cabin. Knowles was at home on my return, and so was Miner. Weather, very stormy.

January 7.—Left camp and rode to south end of Cottonwood Basin to meet Corporal Herb, but he failed to come, so returned to camp. Saw 3 whitetail deer and 97 elk to-day along the Yellowstone River. Weather, clear.

January 8.—Left camp with Corporal Ornes, proceeded to Tom Miner's cabin. Requested Miner to go with us and show us where he had killed his elk. At first he refused to do so, but after talking to him a little while he concluded to go. Found that he had first shot the elk outside the park about 500 yards, but the elk ran into the park about 400 yards before he killed it, so he killed the elk inside the park, but wounded it outside, for which I feel that I am in duty bound to arrest him for the offense. Saw a great many herds of elk on Crevasse Mountain near the park line, but they were all inside the park. Two whitetail deer above Miner's cabin. After we got through at Miner's we proceeded to Buffalo Creek, arrived there at sundown. Weather very cold and cloudy. Sent Private Carter into the post with 3 pack mules and note to Captain Erwin.

January 9.—Left camp on Buffalo Creek on foot; went out about half a mile, but it was snowing so hard that we could see nothing whatever, so decided to return to camp and listen for any shooting that might take place, but did not hear any near the park line, except below Gardiner we could hear six shots fired just at dusk and one in the forenoon. Heard two shots fired on Mount Everts about 5.30 p. m. Have seen no sign of anyone having been in the park poaching, except Tom Miner on Crevasse Creek. Saw no game to-day. Weather, stormy; snowing hard all day.

January 10.—Left camp on Buffalo Creek to return to camp on Big Blacktail Creek. Saw no sign of anyone poaching in the park. Got back to Tom Miner's cabin and found him dressing up to leave. I told I would have to arrest him for killing elk in the park. Took him to our camp on Big Blacktail and kept him overnight. Saw a great many elk on Crevasse Mountain, but outside the park. Weather, clear.

January 11.—Left camp on Blacktail for Fort Yellowstone with Corporals Herb and Ornes and prisoner Miner. (Corporal Herb met me on Crevasse Creek on the 10th instant.) Left Mr. Miner's arms and meat in camp, pending action of the commanding officer at the post. Saw 117 elk near mouth of Blacktail and 40 between Blacktail and top of Gardiner grade; 9 blacktail deer on Gardiner grade, 14 at forks of East and West Gardiner rivers; 9 mountain sheep on Mount Everts, opposite same place; 5 deer east corner of pasture. Arrived at the post with prisoner at 1 p. m. Weather, cloudy and very cold.

January 30.—Left post with Sergeant Wall, Private Weston, Private Martin, and 5 pack mules, to put Sergeant Wall in camp on McMahon Creek, on Mount Everts, by order of Captain Erwin. Returned to post with Private Martin and pack mules. Weather, clear.

January 31.—Received orders from Captain Erwin to take 2 privates and 3 pack mules to make a six days' trip to the Soda Butte district and Crevasse Mountain, then return to the post. Weather, clear.

February 1.—Left post with Private Martin, Private Rompre, of H Troop, Private Slough of D Troop, and 4 pack mules, for Hellroaring Creek. Only got as far as outlet of Big Blacktail Creek, on account of the ice in the Yellowstone River, which was frozen out so far from shore that we had to cut a channel through. Camped in old camp at ford of river. Saw two mountain sheep on east point of Mount Everts; got within 30 feet of large ram near the Cooke City road. Saw about 1,000 elk scattered along the road from top of Gardiner grade to mouth of Blacktail Creek. The beaver in Blacktail have not been working lately, nor have they been molested. Clear.

February 2.—Left camp with Privates Rompre and Slough to go up to Soda Butte Station, via Hellroaring and Slough Creeks. Sent Private Martin back to post with 1 mule. Saw about 3,000 elk between Cottonwood Creek and Soda Butte; 3 whitetail deer, 1 blacktail deer; 1 mountain sheep near Cottonwood Creek. Found 3 men absent on patrol duty when I arrived at station, but they returned at 8.15 p. m. Weather, clear.

February 3.—Left station with same party and returned to camp at Blacktail Ford with rations for the brush cabin on Line Creek. On Hellroaring Creek found everything O. K. at the station. Saw about 1,000 elk on Hellroaring, about 700 of them in one herd. Saw 9 mountain sheep near Cottonwood Creek; 3 whitetail deer near the ford of Yellowstone River. Weather, blinding snowstorms for about four hours and very cloudy all day. Average depth of snow 15 inches from Hellroaring to Soda Butte Station.

February 4.—Stayed in camp at Blacktail Ford of the Yellowstone River to fix up brush cabin and listen for any shooting on Crevasse Mountain. Our stock was very tired from our trip to Soda Butte and back here, which is about 28 miles each way. The ice in the river has about all gone out in the last two days. Weather, cloudy in a. m., clear in p. m.

February 5.—Left camp with same party and proceeded to J. S. Knowles's cabin, thence over Crevasse Mountain to Buffalo Creek, to look after Scotty's camp and see what he is doing there. We arrived on Buffalo Creek Mountain about 1.30 p. m. Went into camp inside the park line. Laid low all the afternoon to listen for any shooting that might take place, but did not hear any. Saw an old web snowshoe trail leading into the park from Scotty's camp, but it was three or four days old. Saw where one elk had been shot inside the park, but could not see where it had been butchered. Saw 3 whitetail deer at Knowles Lake, 4 at Knowles Cabin; 42 elk on Crevasse Mountain about 100 yards outside the park. Weather, cloudy and chinook wind blowing.

February 6.—Left camp with same party; went out on the cliffs and watched for anyone coming out or going into the park. Stayed there until about 1 p. m., then went over to my old camp on Buffalo Creek. Found that Scotty had camped there since his arrest, but he has moved away in the last three or four days. I have since been informed that he has moved down the river about 4 miles below Gardiner. After finding he had moved I came over to Sergeant Wall's camp on McMahon Creek; found Sergeant Wall and Private Weston absent on patrol duty. There has not been much of anything going on since January 15. Weather, cloudy and chinook wind. Saw no game.

February 7.—Left camp with Sergeant Wall and made a patrol down to Reese Creek. There has been some elk killed, but outside the park. Privates Weston and Rompree made a patrol over Mount Everts. Private Slough remained in camp. They saw 8 elk and 30 antelope on Mount Everts. We left camp at 6 p. m. for the post; arrived at post at 7.30 p. m. Weather, cloudy and warm wind.

[Sergeant M. J. Wall, 1898.]

January 30.—Left the post at 6.15 p. m.; made camp on McMahon Creek at 8.20 p. m. Night mild.

January 31.—Left camp at 10.20 a. m. Made a patrol on Gardiner Flat. Found Tom Newcomb on Gardiner Flat and told him the commanding officer wanted to see him. Returned to camp and made a patrol on the east side of Mount Everts. Game seen: 100 antelope on the east side of Mount Everts, 6 mountain sheep, same side, and 20 elk on the west side of McMahon Creek. Weather, warm. Traveled about 10 miles.

February 1.—Left camp at 10 a. m. Made a patrol on Turkey Pen Trail and on the east side of Mount Everts. Game seen, 150 antelope on Gardiner Flat, and 200 head of elk counted on northeast side of McMahon Creek, and 1 mountain sheep (a ram) on the mountain northeast of the Turkey Pen Trail, and about 400 elk on the south slope of Mount Everts. Discovered one blacktail deer, killed by a mountain

lion, on the east side of Mount Everts about 100 yards from where he killed the elk. I saw his tracks in a great many places, and believe he is about as big as an African lioness. I saw 5 bull elk south of McMahon Creek. They were all very large. I saw Tom Newcomb on Gardiner Flat, and he gave me a bottle of strychnine to put on the meat, which I did. No signs of anyone having been on Mount Everts since last patrol. Weather, fine and mild. Traveled about 20 miles.

February 2.—Left camp at 8.30 a. m. Made a patrol on Buffalo Creek and Buffalo Mountain with Private Weston. Found Crawford's camp to be abandoned. Looked all around Buffalo Creek and Buffalo Mountain, but he was not to be found in that location; he must have left camp on the 31st of January, in the night. I saw his camp on that day from Mount Everts. There was a man walking on Buffalo Mountain. Saw fresh man and horse's tracks leading from Crawford's camp to Mr. Moore's cabin; I believe them to be the tracks of Crawford. There is a cabin on the northeast of Buffalo Mountain, where there was someone, but seeing me coming they left. I had heard a shot fired long before I got there. When I reached the place I saw about 100 head of elk all around Buffalo Mountain, looking as if they were hunted very much. Followed trails all around and could find no signs of any game having been killed, so returned to camp. Game seen during patrol: 200 antelope on Gardiner Flat and on the east slope of Mount Everts; about 200 elk on east and west of Buffalo Mountain. Weather, normal. Traveled about 25 miles.

February 3.—Left camp at 9.30 a. m. Made a patrol on the north boundary line and to Reese Creek and to a prospector's cabin; no signs of anyone having been there of late. I had Private Weston patrol the east of Mount Everts and look at the deer that was poisoned. He found two foxes, which were poisoned, and were destroyed by crows picking holes in their heads; he also saw 30 bull elk on the south slope of Mount Everts and 400 cow elk on the east slope of Mount Everts, and 4 mountain sheep on the ridge of Everts. Game seen during the day: 100 head of antelope on Gardiner Flat and 50 head of elk on the west side of McMahon Creek, and 6 mountain sheep on the east of Mount Everts. Weather, blowing northwest and light snow. Traveled about 20 miles.

February 4.—Left at 9 a. m. Made a patrol on Crevasse Mountain to meet Scout Whittaker, which I failed to do on account of snowdrifts. My patrol would be to Mr. Knowles's cabin to leave a note for the scout. Also my horse was very lame and could not make it to Mr. Knowles's cabin and then to my camp, so I returned to camp. On my return I saw the poachers' cabin on Buffalo Mountain. I went over to it. There was a fire burning inside, but no one at home. I looked all around and saw some mink skins and what I thought to be fox skins. Waited to see if anyone would show up; then it was getting dark, so I returned to camp. Game seen, 200 antelope on Gardiner Flat. Private Weston made a patrol on Turkey Pen Trail, and also went to the top of the mountain northeast of Turkey Pen Trail. He saw 11 mountain sheep on the mountain. Two of them he said were rams, which he said were last spring lambs, and the remainder of them very small. He also stated that he believes all the big rams are killed off. Private Weston saw 200 elk west of Turkey Pen Trail and 100 antelope on Gardiner Flat. I believe there is more poaching done around here than any other part of the park, outside of Snake River and Riverside. There is a variety of game in this part—1,000 elk, 300 antelope, 200 blacktail deer, about 40 mountain sheep, and plenty of foxes, beaver, and mink. Weather, fair. Traveled about 30 miles.

February 5.—Private Weston left camp at 9.30 a. m.; made a patrol on the north boundary line and to Reese Creek. Said he saw no signs of anyone having been there since last patrolled. Game seen during his patrol, about 200 antelope on Gardiner Flat, 1 that was crippled on the west side of Gardiner River, 20 head of elk on Reese Creek, and 15 blacktail deer on Reese Creek. He traveled about 15 miles.

I left camp on the same day about 11 a. m.; made a patrol on Turkey Pen Trail and on Mount Everts. Travel very bad on account of snowdrifts. Game seen during patrol, about 40 elk on the slope south of McMahon Creek, 7 blacktail deer on the ridge of Mount Everts, and 6 mountain sheep on the west of Mount Everts. Found 1 fox that had died from the poisoned deer meat. No signs of anyone having been there since last patrol. Weather, mild. Traveled about 10 miles.

February 6.—Left camp at 9 a. m.; made a patrol on Turkey Pen Trail and to Cooke City road. Game seen, about 200 elk on the west side of trail and 1 mountain sheep on the mountain northeast of the trail, and about 200 antelope on Gardiner Flat. Sent Private Weston to the post to get one day's rations. No signs of anyone over the trail since last patrol. Weather, chinooky. Traveled about 16 miles.

February 7.—Left camp at 9.30 a. m.; made a patrol on the north boundary line. Scout Whittaker and I saw signs of blood on the trail leading to the line of the park; looked as if it was meat that was taken but the night before. Saw fresh tracks of a man and horse leading to the park; heard one shot fired close to the line. Also made a patrol on Reese Creek. Saw no signs of anyone having been there since last patrol. Weather, chinooky. Traveled about 12 miles.

[Scout Whittaker, 1898.]

February 8.—Reported to Captain Erwin for duty. Attended court at Commissioner Meldrum's house—Tom Miner case.

February 9.—Attended court again on Tom Miner case. Weather, clear.

February 10.—Attended court until 11.30 a. m., when trial was over. Prisoner found guilty of killing an elk in the park. Took Private Martin and all the pack mules out in the afternoon for practice. Weather, clear.

February 11.—Left post, mounted, with Private Root to make a patrol along north line of park, via Gardiner and Cinnabar, and try to locate Scotty's camp; found it on Trail Creek. Returned to post at 5.30 p. m. Weather, cloudy.

February 12.—Remained in the post.

February 13.—Took Private Murphy and left post, mounted, to make a patrol on Mount Everts. Returned to post at 5.45 p. m. Weather, cloudy and very windy.

February 14.—Remained in the post.

February 15.—Left post with Sergeant Wall, mounted, to make a patrol to Buffalo Creek and Mount Everts. Returned to post about 4.45 p. m. Left Sergeant Wall out on Mount Everts until about 7 p. m., when he should return to the post. He returned about that time.

February 16.—Reported to Captain Erwin at 9 a. m. for orders, but it was storming so hard at that time could do nothing. Storm ceased about 10.30 a. m. Received orders at that time to take Sergeant Wall and Private Weston with seven days' rations and leave post after dinner. Left post at 2.30 p. m.; put Sergeant Wall in camp, and returned to post with the mules. Weather, very stormy.

February 17.—Remained in the post.

February 18.—Left post with Private Slough, of D Troop, and Privates La Mont and Martin, of H Troop, with five days' rations and five pack mules, to make a patrol to Hellroaring Creek. Saw about 300 elk between forks of Gardiner River and outlet of Big Blacktail Creek. The beaver in this creek have not been molested. Saw 3 deer on east end of Mount Everts; 6 deer on north side of Yellowstone River, opposite camp. The snow was not very deep, except a few drifts. Weather, cloudy.

February 19.—Stayed in camp until 12.30; then went up the river with Private Slough to look for sheep sign. Sent Privates La Mont and Martin back to post with 2 mules, Private La Mont to return to camp after they got to Blacktail Lake. He saw about 75 elk and 4 deer. Weather, clear.

February 20.—Left camp with Private Slough and Private La Mont, and went down to Crevasse Creek to see if any one had been there, but saw no sign of anything having been done there since I was there last time. Mr. Knowles informed me that there have been all of 2,000 elk in sight at one time near his place, in the last fifteen days. I saw 26 elk on the east side of Crevasse Creek, one-half mile north of Mr. Knowles', inside the park. The elk seem to be working up very high and back towards the Hellroaring district. Saw 14 deer, 6 whitetail and 8 blacktail on opposite side of the river from our camp. The snow is not very deep anywhere yet, except on Crevasse Mountain. Saw one scabby elk near the ford on Oxbow Creek. Weather, clear and very warm.

February 21.—Left camp with Private Slough and Private La Mont. Rode up to south end of Cottonwood Basin to look over the sheep range and see if they were still there, but after looking over it carefully I could not see a single fresh sign of any sheep. I presume they have moved to some other range. Saw 5 whitetail deer near mouth of Cottonwood Creek. Saw about 1,000 elk between the ford and south end of Cottonwood Basin; also, found 3 calf elk that had been killed by mountain lion, there being fresh tracks of such aninals around the carcass of each elk. Weather, stormy.

February 22.—When we woke up this morning we found all of our mules gone, but still had the troop horses left. We rode them after the mules, and found them about 2 miles from camp. Returned to camp, packed up, and proceeded to Sergeant Wall's camp. After we arrived there I received orders from Captain Erwin, through Private Weston, to investigate the killing of a deer about 1 mile above the Government ice lake. I found said deer and also the carcass of an elk. The deer had been shot, but the elk, in my opinion, had been killed by coyotes. I came into the post with Private Weston and Private La Mont, and reported the same to Captain Erwin, who gave me orders to remain in the post over night and return to Sergeant Wall's camp to-morrow morning, leaving Privates Weston and La Mont in the post. Saw 17 blacktail deer near mouth of Blacktail Creek, 6 on Mount Everts, 18 just above the Government ice lake. Saw about 250 elk on Mount Everts, and 7 coyotes same place. Weather, clear.

[Sergt. M. J. Wall, 1898.]

February 16.—Left camp at 4 p. m., to patrol the Gardiner Flat and portion of Turkey Pen. Found no signs of anyone crossing the Gardiner River. The antelope were on Gardiner Flat in small bands, from 10 to 15 in each band, and seemed to be

more wild and uneasy than ever. On my return I crossed Gardiner River and found about 150 in one band on the west side of Gardiner River, about 400 yards from Gardiner City, very much watched by the so-called citizens of Gardiner. Two men had guns; one of them Mr. Mack, the other was a stranger to me. There was also about 300 head of elk on the northeast slope of Mount Everts. Weather, cold and light snow. Traveled about 10 miles.

February 17.—Left camp at 10.30 a. m., and patrolled Buffalo Creek and Buffalo Mountain, and followed boundary line to where it crosses the Yellowstone River. Myself and Private Weston went to the camp of Crawford, which was supposed to be occupied by John Dewing. It was found deserted, and there was no evidence of its having been used by anyone lately. The cabin on north side of Buffalo Mountain is still used by parties, but have found no evidence of game being killed across park line, nor no new trails leading into park. Saw 5 blacktail deer on Buffalo Creek and signs of elk on Buffalo Mountain. Returned to camp at 6 p. m. Weather, cold. Traveled about 16 miles.

February 18.—Left camp at 9.30 a. m., and patrolled Reese Creek and north boundary line, myself and Private Weston. On going through Gardiner, a man joined us on the road, and told me there were parties going in there, but if I would watch it that night I would catch them coming out. I afterwards found his name out and asked those men's names, which he said he did not care to tell. I also found out that he was putting me on the wrong trail. Game seen, 6 blacktail deer on the west side of Reese Creek and 1 cow elk, which was wounded in the shoulder. She was then traveling up Reese Creek. Weather, cold. Traveled about 15 miles.

February 19.—Left camp at 10 a. m. and patrolled Trail Creek Mountain with Private Weston; also to find Crawford's camp, but could not locate it. Was told he had taken a load of meat out to Horr, and on my return myself and Private Weston went to Horr to find out if it was so. I was told he was not bringing his meat to that town. I saw Crawford there on the same day. Game seen: About 250 elk on slope of Mount Everts and 200 antelope on the west side of Gardiner River. Returned to camp about 6.30 p. m. Traveled about 20 miles. Weather, cold.

February 20.—Left camp at 10 a. m. and patrolled Trail Creek and also went to the town of Horr. I had sent Private Weston to Mount Everts, to find out if he could see the sheep on the regular range, but he could not see any signs of them. He thinks they have left Mount Everts. When I got to Horr I saw the said Brundage, and Dewing, and Drummond (a man who is a stranger to me), and Brundage's pack horses standing outside Mr. Welcome's saloon. Brundage had made a remark to the strange man, "I am ready, as I am out of meat and money, and we must go to-night." I heard him say, "We will go towards Reese Creek." After they had left I sent a telegram to the post for two men to report to me at Horr. Sergeant Alexander and Private Palmer reported to me. We waited until towards morning, then left for Reese Creek. We patrolled every place we thought we could find them, but failed to do so; then we thought they were notified. Returned to camp about 7 a. m. and Sergeant Alexander and Private Palmer returned to post. Weather, cold. Traveled about 28 miles.

February 21.—Private Weston left camp at 7 a. m. Made a patrol on the north boundary line and also up towards Ice Lake. Hearing shots fired, he went in that direction, and found one blacktail deer dead, about 1½ miles southeast of Ice Lake. He returned to camp, and not finding me there, waited for my return. I was making a patrol on Gardiner Flat. When I returned he reported it to me. Game seen by Private Weston: 50 head of elk on the west side of Gardiner River. Game seen by myself: 12 head of antelope on Gardiner flat. Weather, fair. Private Weston traveled about 12 miles; I traveled 4 miles.

February 22.—Left camp at 9.30 a. m. with Private Weston. Went to the place where Weston had seen the dead deer. We thought the best thing to do was to skin the deer and send Private Weston to the post to report to the commanding officer, which he did. I waited around there for some time to see if anyone would show up, but no one came, so I returned to camp. On my return I found Scout Whittaker and his party in my camp, and Private Weston returned from the post, with orders from the commanding officer for all to return to the post. Scout Whittaker told me he would leave me and Private Slough in camp until further orders. Game seen: 200 antelope on the west side of Gardiner River. Weather, fine. Traveled 8 miles.

February 23.—Left camp at 11 a. m. On my way I met Private Martin, and he told me to report to Scout Whittaker, myself and Private Slough, which I did; and he told me to take Sergeant Alexander and Private Lefler to the place where the deer lay, which I did; and then I was to report to Scout Whittaker, to find out where all the shooting was done which we heard. We could not find out, so we returned to camp about 9.30 p. m. Game seen: About 200 antelope on west side of Gardiner River; 14 elk around Ice Lake. Weather, fine. Traveled about 18 miles.

February 24.—Packed up all property and sent Private Martin to the post with

pack mules. I left camp at 10 a. m. to make a patrol to Horr, which I did, and meeting Mr. Welcome, he told me if I would lay for Brundage I would catch him. I returned to Cinnabar, and meeting Scout Whittaker, I reported to him what I had heard from Mr. Welcome. Scout Wittaker sent Private Slough to the post to find out what to do. Scout Whittaker told me to go as far as Mr. Shields's ranch and he would send me a man, which I did, and couldn't find any trail of Brundage, so I returned and found Scout Whittaker and Private Slough at Yellowstone Bridge, where Scout Morrison joined us shortly afterwards; then all returned to the post about midnight. Game seen: 7 blacktail deer. Weather, cold. Traveled about 30 miles.

[Scout Jas. G. Morrison, 1897 and 1898.]

November 24, 1897.—Left the post with Privates McReynolds and Miller to go over on the Gallatin. On account of deep snow we got no farther than the pocket on Fawn Creek, where we camped. Saw about 750 elk; also numerous signs of beaver on the Gardiner River and Fawn Creek. Distance traveled, about 12 miles.

November 25.—Took back trail down Fawn Creek about 4 miles; thence south along Quadrant Mountain to Indian Creek and up it about 4 miles to snowshoe shack, where we camped. Saw about 150 elk. Many signs of beaver on this creek. Distance traveled, about 15 miles.

November 26.—Remained in camp; scouting up Indian Creek. No signs of game. Distance traveled, about 10 miles.

November 27.—Proceeded to the post. Distance, 12 miles.

February 14, 1898.—Left the post, accompanied by Corporal Ornes and Private Rompre, at 9 a. m. for Soda Butte. Arrived at Yancey's at 4 p. m. Saw about 800 elk. Warm and snow. Distance, 20 miles.

February 15.—Left Yancey's at 9.30 a. m.; arrived at Soda Butte at 4 p. m. Saw about 500 elk. Distance traveled, 15 miles. Warm and pleasant.

February 16.—Remained at Soda Butte on account of very severe snowstorm. Warm and snow.

February 17.—Party, consisting of Corporals Ornes and Herb and Privates Edwards and Rompre, left station, mounted, for Mirror Plateau, following trail up East Fork of Yellowstone. The snow was too deep south of Miller Creek, so made camp south of it about one-fourth mile. Snow 2½ feet deep. Saw about 100 elk on north side of Cache Creek; a great number of Elk signs all the way up to Miller Creek. In Cache Creek bottom saw signs of blacktail deer, but saw only 1, a doe. Distance, 13 miles. Clear and very cold.

February 18.—Left camp with Corporals Ornes and Herb for Ponuntpa Springs on skis, following right bank of East Fork to within a mile of Timothy Creek, up Timothy to near its head, and camped. Snow about 3 feet, very loose, and skiing very hard. Saw a number of mountain lion tracks; also much beaver sign on Timothy Creek. Distance, about 10 miles. Privates Edwards and Rompre remained in camp. Mild; snowing all day.

February 19.—Following to head of Timothy and down Pelican Creek about 4 miles; thence across to Broad Creek, up it to hot springs near Fern Lake, arriving there about noon. Leaving Corporal Ornes to make camp, Corporal Herb and myself left for Ponuntpa Springs to look for buffalo. Found numerous signs of buffalo all around the spring and on both sides of Sour Creek. Followed them down Sour Creek to where a hot creek came down from a hot mountain on the north side, which they went up, and a close examination of the trail which they made going west to Hot Creek (the trail was not made in single file, but band was spread out). I estimated the band as follows: 4 calves, 8 bulls, about 8 or 9 cows, but think some of the signs which I took for cow signs may have been made by two-year-old bulls; in all 21 head. Ponuntpa Springs is an ideal wintering place for the band which is there, as there is no snow to speak of on the flat, which is about a mile long and three-fourths wide, and is covered with hot springs and hot creeks. The snow on Mirror Plateau is about 5 feet. Mild and fair weather. Distance, about 12 miles.

February 20.—Returned to camp on East Fork as went up. Temperature, mild; weather, fair. Distance, 18 miles.

February 21.—Entire party with pack train left for station (Soda Butte). Saw a few elk, also numerous signs of lynx on Cache Creek and Calfee Creek. Distance, 13 miles. Weather, stormy; temperature, mild.

February 22.—Left Soda Butte for Yancey's on return to post. Saw about 1,000 elk. Weather, fair; temperature, mild.

February 23.—Left Yancey's for post. Saw about 450 elk. Weather, fair; temperature, mild. All the game seen on this trip was in excellent condition for this time of the year.

February 25.—Scout Whittaker and myself left the post to patrol north line and locate Brundage's camp, and see if he had elk meat in his possession. Found that he had left his camp, but could not locate him. Saw about 400 antelope on flat in

front of Gardiner; 3 blacktail deer on road to same place. Went from Gardiner to Brundage's camp on Eagle Creek, from there down Trail Creek to Horr, up Yellowstone River to Cinnabar, and thence by road to post. On the head of Trail Creek we saw James Forsyth and Frank Bezere with a wagon load of elk meat; followed the back trail, and found where they were killing, on Eagle Mountain, about 1½ miles northwest of Gardiner. Weather, clear; temperature, mild. Distance, 25 miles.

February 26.—Scout Whittaker and myself left post to scout north line and meet train at Cinnabar. Saw 6 blacktail deer, 18 whitetail deer, about 400 antelope, and 4 elk. Weather, clear; temperature, mild. Distance, 17 miles.

[Scout Whittaker, 1898.]

February 23.—Left post with Private Martin and 2 pack mules, with grain for camp on McMahon Creek. After proceeding about 1 mile north of post I distinctly heard two shots fired near the north point of Sepulchre Mountain. I sent Private Martin on to camp, while I returned to post to inform Captain Erwin of the shooting I heard. Two men were detailed at once to go with me and see what had been done, or if anything had been killed. I took Sergeant Alexander and Private Lefler, of D Troop, and proceeded to the Government garden, where I met Sergeant Wall and Private Slough. I sent Sergeant Wall with Sergeant Alexander and Private Lefler and told him to put them on a hill above the Government Ice Lake, then come down where I was going to stop. I took Private Slough and patrolled along north line of the park to Gassert Creek, where I found the trail of a horse leading into the park; followed it, and saw where a man had dismounted from his horse and walked around awhile, then mounted his horse again and rode towards Cinnabar. I stayed out until 10 p. m., then returned to Sergeant Wall's camp. Sergeant Alexander returned to the post about 7.30 p. m. Saw about 300 elk near north point of Sepulchre Mountain; about 50 antelope on the Gardiner Flat. Weather, clear and warm.

February 24.—After packing up the mules I sent Private Martin to the post with them, while I took Private Slough and Sergeant Wall and patrolled the north line to Reese Creek. When I got to Cinnabar I was informed that Brundage was coming into Horr with a load of elk meat. Not knowing just what to do I sent Private Slough to the post with a letter to Captain Erwin for orders in this matter. About 7 p. m. I met Scout Morrison and Private Slough with orders from Captain Erwin to watch for Brundage and see if he had any meat in his possession. I sent Scout Morrison and Sergeant Wall to Trail Creek, while I watched the bridge at Gardiner. We stayed out until about 11 o'clock, but saw nothing of Brundage, and decided to return to the post. We arrived at the post about 12.30 p. m. Saw 14 elk back of Gassert ranch. Weather, clear and warm.

February 25.—Left post with Scout Morrison to make a trip to Eagle Creek and see if we could locate a band of 21 sheep, which were reported to have left the park. We saw nothing of them, but about 1 o'clock p. m. we came onto two men, Frank Bezere and James Forsyth, with a wagonload of elk meat, which had evidently just been killed. Frank Bezere asked us not to put him on the road for having the meat in his possession. We did not say anything, but went to Trail Creek, then to Horr, where we wired Captain Erwin about the meat we had seen. Then we proceeded to the post. Saw about 400 antelope at Gardiner, inside the park. Saw 6 deer near the post and 11 near the Government ice lake. Weather, clear and warm.

February 26.—Left post with Scout Morrison to patrol north line as far as Reese Creek. Went to Cinnabar. When train arrived, met Game Warden James F. Keown, who came up to arrest Bezere and Forsyth. He went to post to remain over night. We returned to post about 5 p. m. Saw about 350 antelope near Gardiner. Weather, clear and warm.

February 27.—Scout Morrison, State Game Warden James F. Keown, Sergeant Wall, Private Rompre, and myself left Fort Yellowstone to look for A. K. Crawford's camp and anybody that was violating the game laws. Mr. Keown and Scout Morrison went to Eagle Creek, while I took Private Rompre and Sergeant Wall and went down to Cedar Creek; scouted around there until about 4 p. m., then went to Cinnabar and remained over night. Mr. Keown and Scout Morrison returned to post. Saw 6 deer near the Government ice house; one had its front leg broken; I presume it was done while running. Weather, cloudy and warm.

February 28.—Received orders from Scout Morrison to meet himself and Mr. Keown at Gardiner with buckboard. We met there at about 9.30 a. m. After I saw Mr. Keown I told him I thought I could get him another case on Reese Creek if he could get along without me. He told me to go by all means and try to catch whoever was doing hunting at that place. I left Sergeant Wall and Private Rompre in his charge. After I got to Reese Creek I found the footprints of two men leading into the park, but could not find where they had done anything. I followed the tracks until about 3.30 p. m., when I saw the two men following a lot of elk trails that were there. I asked them if there was any game there. They said "Yes," but they could not find it. I started to go home, and after I went about 400 yards they started to follow

me out. I suppose they were going back to the coal banks where they were from. I returned to the post about 5.30 p. m., and reported all the doings of my trip to Captain Erwin. Weather, cloudy and warm.

March 1.—Remained at post. Weather, cloudy and warm.

March 2.—Received orders to go to Livingston with Scout Morrison, in response to a telegram from State game warden to Captain Erwin, the acting superintendent of the park, to give our testimony in the Frank Bezere elk-killing case, which case was set for 6 o'clock p. m. On our testimony the accused was held for next term of district court. Said court convenes some time in the month of April. Weather, clear and warm.

March 3.—Returned from Livingston to Fort Yellowstone with Scout Morrison and reported for duty. Weather, cloudy and cold.

March 4.—Reported to Captain Erwin, the acting superintendent of the park, at 9 a. m., and received orders to take two men and eight days rations and work in the Reese Creek district, and as far east as the Gardiner River. At about 2 p. m. left post with Privates Rompre and Martin of H Troop, and Private Slough of D Troop, and four pack mules. Proceeded about 7 miles north of post and pitched camp at the north point of Sepulchre Mountain. After making camp I sent Private Martin back to post with all the mules. Saw about 250 antelope near Gardiner City; also saw a herd of 11 horses about 1 mile south of north line. Weather, cloudy and stormy.

March 5.—Left camp with Privates Rompre and Slough and patrolled the north line as far as the Gassert ranch; then I sent Privates Slough and Rompre back to camp, via Cinnabar, with orders to come to Reese Creek if I did not return to camp by 4 p. m. After leaving them I went to the McMahon ranch, on Reese Creek, to see if anybody was up there hunting, but learned that nobody had gone up there since last Tuesday. On that day two men brought out 1 elk, could not tell just where it was killed or who the men were, but they belonged in Horr. Saw about 75 antelope between Gardiner and Chadbourne's ranch, just outside the park, but they came back in the park towards evening. Saw 1 large bull elk near our camp. Weather, clear and very warm.

March 6.—Left camp with Private Rompre to patrol the north line as far as Reese Creek, and stayed there until 8.30 p. m., then returned to camp. Sent Private Slough to patrol east as far as the Gardiner River. He saw about 200 antelope near Gardiner, but inside the park. I saw about 50 near the Chadbourne ranch, outside the park, but they returned toward evening. There has been nobody on Reese Creek since Thursday night. The snow is going very fast on this creek. Weather, clear and very warm.

March 7.—Left camp with Privates Rompre and Slough to round up a herd of 9 horses that have been running on the park and send them into the post. After I got them started I let Privates Rompre and Slough take them to the post, while I patrolled the north line to Reese Creek again. After I got to Reese Creek I went down to Horr to see if I could find out anything about "Scotty" Crawford or Brundage, but I did not succeed in getting any information of Brundage. But "Scotty" was in Horr last night; I was told that he had given up hunting for meat. I went back to Reese Creek and remained there until 5.30 p. m., when it began raining so hard that I decided to return to camp, there being no sign of anybody up there to-day. Privates Slough and Rompre report seeing about 250 antelope near Government ice lake; they saw 8 deer near our camp. I saw 13 back of the Gassert ranch—all blacktail. They must have just moved in there; it is the first time I have seen them there this winter. Weather, cloudy and warm; wind blowing and raining in afternoon.

March 8.—Left camp with Private Slough and patrolled along the line to the Gardiner River, thence back to camp. Remained in camp until about 6.30 p. m., then started down to lay at Reese Creek. When I got there found out that there had been nobody up there, yet I returned to camp about 11 p. m. While in Gardiner learned that Brundage had been there yesterday, but did not bring in any meat. He returned to his camp last night. I saw about 350 antelope near Gardiner, but inside the park. I saw about 50 last night when I was coming back to camp from Reese Creek, along the road between Gardiner and Cinnabar, just above the Chadbourne ranch, but nothing seems to molest them. About 2 inches of snow fell here last night. Weather, cloudy; cold wind blowing all day

March 9.—Left camp with Private Rompre to make a patrol to Reese Creek. I sent Private Slough to patrol to McMahon Creek, on Mount Evarts. When I got to Cinnabar I wrote Captain Erwin, the acting superintendent of the park, a letter requesting that I be allowed to remain in camp until Sunday night; also wrote a letter in regard to "Scotty" Crawford, but later I learned the information was false and wired the same to Captain Erwin. Towards evening I went to Horr. I remained there until 5 30 p. m., then went up to Reese Creek. There was nobody up there. I layed along the Yellowstone River until about 7.30 p. m., then I went to Cinnabar

and remained there until 9 p. m., then returned to camp. While at Horr learned that Brundage had a contract to furnish elk meat to a certain party, for a debt he owes to said party, to the amount of 1,500 pounds. Also saw two men come in with guns and a rope which had blood on it. Don't know where they came from. Saw about 75 antelope near Gardiner, inside the park, 12 deer back of Gassert ranch. Private Slough saw about 100 antelope on the McMahon bench at north point of Mount Evarts. A. K. Crawford went up to Bear Gulch to-day. Weather, cloudy and cold; wind blowing.

March 10.—Sent Private Slough to Reese Creek while I took Private Rompre and went to the post to report to Captain Erwin and see if I could return to camp and remain until Sunday. My request was granted, and I took two days' rations and Private Martin, with one pack mule, and returned to camp at 5 o'clock p. m. Sent Private Martin back to post with the mule. I saw about 100 antelope near Gardiner, about 100 on Mount Evarts, 2 deer on Mount Evarts, 6 on the Government dump, 9 near the Government ice lake, all blacktails. Saw 10 mountain sheep on Mount Evarts, near McMahon coal bank. Weather, cloudy and cold; wind blowing. About 6.30 p. m. Private Slough and myself met "Scotty" Crawford's partner going towards Gardiner with one pack horse loaded with grub. He went up to Bear Gulch.

March 11.—Sent Privates Rompre and Slough to Reese Creek while I made a patrol to the Gardiner River, thence back to camp. I saw nothing on my trip, but Rompre reported seeing 1 large bull elk on Reese Creek with one hind leg broken. About 4 p. m. decided to go to the post and ask Captain Erwin to let Scout Morrison come down to-morrow and go with me to Eagle Creek and see where "Scotty" Crawford's partner had gone to. I left the post again at 7.15 p. m., and patroled the road back as far as Chadbourne's ranch, then returned to camp. I saw 15 black-tail deer on river bed, just opposite the Boiling River, 9 white-tail deer near the Government ice house, 57 antelope on west slope of Mount Evarts, just opposite the Boiling River. Captain Erwin told me he would have Scout Morrison meet me to-morrow. Weather, stormy and cold.

March 12.—Sent Private Slough to make a patrol to Gardiner River, then return to camp. After he had returned to camp I sent him with Private Rompre to make a patrol to Reese Creek again, while I went to meet Scout Morrison. I met Scout Morrison about 10 a. m., and proceeded to Eagle Creek; saw nothing there and returned to camp. There I found Privates Rompre and Slough in camp; they reported nothing on Reese Creek. Scout Morrison and myself saw George Mack, of Gardiner, hunting along the north line of the park, about 500 yards west of Gardiner. When he saw us, he came back to the road again and back to Gardiner. We saw about 75 antelope on the east side of Gardiner River, on the Gardiner Flat. Scout Morrison said he saw a great many in the J. C. McCartney field. The 13 deer that were back of the Gassert ranch have moved back into the park and up near the ice lake. Weather, cloudy; temperature, mild.

March 13.—Started out from camp on foot with Private Rompre to watch a small band of antelope near the north line, about 400 yards west of Gardiner. I saw two men near the line. Both of them had guns and were evidently hunting. I watched them until they returned to Gardiner. One of them fired two shots, but I could not see where he had killed anything. One of them was George Mack, of Gardiner. I returned to camp about 12.30 p. m., and found Private Martin had just arrived with the pack mules. I packed them up and sent him back to the post with Private Slough about 1.30 p. m., then took Private Rompre and went to Reese Creek. There had been nobody up there since I made camp here. I returned to the post about 7.30 p. m., and reported everything to First Lieut. G. O. Cress, the commanding officer. I saw about 300 antelope near the road about 400 yards west of Gardiner and outside the park. I reported the fact to Lieutenant Cress, who detailed 2 men to patrol the line to-morrow morning. Also saw about 150 on east side of the Gardiner Flat. Weather, very cold and stormy. About 4 inches of snow fell in our camp last night and to-day.

March 14.—Left the post with Lieutenant Arnold and 17 privates to shovel out the Golden Gate. Did not have much trouble in getting to the Gate, and it only took about three hours to get through the Gate. For about one-half mile from the Glen Creek Bridge we had to shovel a great deal of snow. Then it was easy to get to the Klamer cabin. From there on saw about 100 elk in the vicinity of Swan Lake Flat. Weather, stormy and cold.

March 15.—Left post and went to Gardiner and overtook 2 men who were sent out early in the morning. I took Private Hoover and sent Private Newman to post; then went along the line to Reese Creek, then came back to Cinnabar; stayed there until about 5 p. m., then started for the post. Saw about 300 antelope near Gardiner inside the park. In the evening saw about 75 near the road outside the park. Saw 17 blacktail deer, 4 in Government garden, 14 near Boiling River. Weather, cloudy and cold; wind blowing.

March 16.—Left the post with First Lieut. G. O. Cress, the commanding officer, and

rode up to the McMahon ranche, on north point of Mount Evarts; thence over to Gardiner Flat, then over to the J. C. McCartney field, then to the post via Government garden. Saw 1 blacktail deer near the Government ice house, 1 whitetail deer at the crossing of the old road over the Gardiner River, about 25 antelope on the west slope of Mount Evarts, almost opposite the Boiling River, and between 150 and 175 in the vicinity of Gardiner Flats and about 50 near the J. C. McCartney field. Saw 8 mountain sheep on the bluff near the Eagle's Nest, 5 deer on the west slope of Mount Evarts, opposite the first bridge over the Gardiner River from post. Weather clear and warm. At the Government garden we saw a duck going down the river on its back, and landed on the opposite side of the river. I then went over and caught it and found it bleeding from the head. Saw some fresh beaver sign just below the first bridge over the Gardiner River north of the post.

March 17.—Left the post with Lieutenant Hawkins to make a patrol to Reese Creek, then back to the post. Saw about 150 antelope in the vicinity of Gardiner Flat and north point of Mount Evarts, and about 150 west of Gardiner, some outside the park and some inside. Saw 10 mountain sheep on Mount Evarts, 24 elk near Government ice lake. Mr. McMahon informed us that some meat had been taken out yesterday. Weather, clear in the a. m. and cloudy in the p. m.

March 18.—Remained in post. Weather cloudy.

March 19.—Left the post with Sergeant Alexander, of D Troop, and Private Boniface, of H Troop; proceeded 7 miles north of the post and went into camp in my old camp at the north point of Sepulchre Mountain for three days. Saw about 50 antelope above the Boiling River on the east side of the Gardiner River, 29 near the first bridge over the Gardiner River north of the post, 11 blacktail deer about the same place, 2 at the Government garden, 9 near the Government ice lake. Arrived in camp about 7.30 p. m. Weather, stormy and cold.

March 20.—In the morning I took Sergeant Alexander and went on top of a high hill so we could see everything that took place on the north line of the park, between Gardiner and Reese Creek. We saw nothing up to 12.30 o'clock p. m. and returned to camp and left for Reese Creek about 5.30 p. m. There had been nothing up there since my last trip, which was on the 17th instant. We saw 8 deer near the Gassert ranche. Saw about 50 antelope one-half mile west of Gardiner and about 500 yards north of the park line. We returned to camp about 8.30 p. m. Weather, cloudy and cold; wind blowing.

March 21.—Left camp on foot with Sergeant Alexander and went almost to the park line to look for the antelope, but owing to the inclement weather we could do nothing, so we returned to camp until about 4.30 p. m. We then took our horses and rode along the park line as far west as the Gassert ranch, but saw nothing, so we returned to camp. It was almost impossible to do anything on account of the intense cold. We saw 3 blacktail deer about 300 yards north of our camp; 10 elk about 700 yards east of camp; all inside the park. Weather, stormy and very cold.

March 22.—Left camp with Sergeant Alexander and patrolled the north line as far as Reese Creek, thence back to camp. We left camp about 3.30 p. m. and went to Fort Yellowstone. Saw nothing on Reese Creek. Game seen to-day, about 150 antelope about 400 yards north of the park line and about one-half mile west of Gardiner; 3 blacktail deer one-fourth mile north of our camp; 19 blacktail deer near the McMahon coal bank on north point of Mount Evarts; 6 near the Government ice house one-fourth mile north of the post; 25 elk about one-half mile east of our camp; about 300 elk on Mount Evarts near the McMahon coal bank. Arrived at post 6.30 p. m. Weather, clear; very cold at night and warm during the day.

March 23.—Left the post with Private Murphy, of D Troop, on snowshoes and went around Mount Evarts down Rescue Creek to Blacktail, thence back to post. Saw about 125 elk on east end of Mount Evarts; 6 mountain sheep same place. Weather, cloudy and cold.

March 24.—Left the post, mounted, about 10 a. m. to make patrol to Reese Creek, then back to post. Saw 3 men near the outlet of Gardiner River; think they were fishing, but could not swear to it. Saw about 125 antelope in the vicinity of Gardiner Flat; 52 on east side of Gardiner River, opposite Boiling River; 23 blacktail deer same place; also 8 near McMahon ranch on Reese Creek. Saw 14 mountain sheep on top of bluff at Eagle's Nest—7 ewes and 1 ram in one bunch and 6 ewes in the other. Saw about 300 elk near the head of McMahon Creek. Weather, clear and chinook wind blowing.

March 25.—Left post, mounted, with Private Palmer, of H Troop, to make patrol along north line to Reese Creek, thence back to the post. Left post 10.20 a. m., returned 4.10 p. m. Saw about 75 antelope on Gardiner Flat; 6 blacktail deer about 300 yards east of the post sawmill. Went to Reese Creek, but saw nothing there; the weather was too stormy to see very far off. Weather, stormy; light snow falling all day but not very cold.

March 26.—Left the post with Private Bledsoe, of D Troop. Went to the outlet of Gardiner River, then west along the park line to Reese Creek. At Gardiner I

found a fresh foot track leading into the park; followed it and found it to be Thomas Newcomb, but he had no arms with him. On the road to Gardiner I saw 4 mountain sheep at the Eagle's Nest. Saw about 75 antelope on the Gardiner Flat; about 150 400 yards west of Gardiner but inside the park; 13 blacktail deer near the Government ice house; 4 at the Government garden. Weather, stormy and cold.

March 27.—Remained in the post. Weather, clear; temperature, cold.

March 28.—Left the post to patrol to Reese Creek, but before I reached there I came across 2 footprints of men going towards the park and I decided to come up Reese Creek, then go back and follow the tracks. There was nobody on Reese Creek to-day. On my return I took up the trail of the 2 men. Had some difficulty in finding it once in a while, but I finally struck it where the snow was deep and found that there were 3 men instead of 2, and that they had gone about one-half mile into the park and there shot and killed 1 cow elk, and it looked as if they had wounded 2 others. They took the meat out last night. There were tracks of 2 men hunting along the line, but they did not get inside the park. I saw 7 mountain sheep at Eagle's Nest; 37 antelope on the west side of Gardiner River; about 75 at the junction of the Gardiner and Yellowstone rivers; about 250 1 mile west of Gardiner, and about 300 yards north of the park line saw 35 blacktail deer, between the Government ice lake and Gardiner River; 4 near the Eagle's Nest; 4 at the two-mile post north of the post; 6 whitetail at the Boiling River; 5 in the Government garden. Weather, clear; temperature, mild.

March 29.—Left the post with Lieutenant Lindsley; went to Gardiner City, then to Cinnabar, then to Horr, then back to where the elk were killed yesterday, then back to the post. Saw 42 elk on the north slope of Sepulchre Mountain, about 15 near the Gardiner ice lake; 3 blacktail deer near the Government garden; about 50 antelope on the Gardiner Flat on the north point of Mount Evarts. Weather, clear in the forenoon, cloudy in the afternoon; temperature, mild.

March 30.—Left the post with Scout Morrison, on skis, and proceeded to Norris. Saw no game. At Willow Park we met Corporal Moore, Private Root, and Private Fremont coming in off pass. Weather, cloudy; temperature, mild.

March 31 (12 miles).—Left Norris with Scout Morrison and proceeded to Canyon Hotel. Saw no game on trip to-day. Weather, clear; temperature, mild.

April 1.—Left Canyon Hotel with Scout Morrison and proceeded to Lake Hotel. We took lunch at Mud Geyser Station. Took Privates Price and Canivan with us from there to Lake Hotel, intending to take them to the Thumb, but when we arrived at the Lake we found Sergeant Leob and two privates from Snake River Station. Scout Morrison and myself then decided to make up our trips from here. I am to take Privates Price and Canivan from Mud Geyser and Private Montgomery of Snake River Station, and go up the Upper Yellowstone River, then to Snake River Station, while he would take Sergeant Leob and Private Carter, and we would meet at that place. Saw 2 foxes and 1 coyote in Hayden Valley. Weather, clear; temperature, mild.

April 2.—Left Lake Hotel with Private Montgomery, of the Snake River Station, Privates Canivan and Price, of Mud Geyser Station, and proceeded to Beaverdam Creek. We went from Lake Hotel straight across the Yellowstone Lake to the lean-to on Beaverdam. The lean-to is filled up with gravel and snow so we could not stay in it, but had to camp in the woods near by. At Terrace Point we saw 14 elk and numerous signs of others. Saw 5 dead elk—last spring calves. Saw what I took to be two moose tracks near the east end of the lake on the mouth of Beaverdam Creek. Saw one fresh bear track which was made to-day along Beaverdam Creek. Have seen no signs of beaver at this place yet. Saw no signs of any poaching having been done. Will venture to say there are between 150 and 200 elk between Terrace Point and Beaverdam Creek. Weather, clear; temperature, warm.

April 3.—Same party left Beaverdam Creek and proceeded to the old Crawford cabin near Atlantic Creek. Camped there over night. There was a lynx at the cabin which had killed something and dragged it to the cabin. I think he had killed a lot of jack rabbits or else another lynx and eaten it up there at the cabin. There has been nobody at the cabin since the rations were put there, nor has there been any poaching done in that district this winter. At least there are no signs of any having been done. Saw 13 bull elk near the outlet of Mountain Creek; also saw signs of 6 moose between Beaverdam Creek and Mountain Creek. The Upper Yellowstone River is open in some places. From Mountain Creek to Crawford cabin there is no sign of game of any kind. The snow is too deep to permit any animal to live in it. Weather, clear and warm. Twenty miles.

April 4.—The same party left Crawford Cabin and proceeded to the gold mines on Pacific Creek. Went up Atlantic Creek and down Pacific Creek. We saw no sign of any game until we got to Coral Creek; there we saw one fresh bear track. The snow will average 7 or 8 feet in depth in that country. Weather, clear; temperature, hot. Twenty-one miles.

April 5.—Same party left gold mines on Pacific Creek and proceeded to Snake River Station. Saw no game of any kind. Left gold mines at 8 a. m.; arrived at station at 7.30 p. m. All the game I have seen is in very good condition; I don't think they will have any trouble in getting through the rest of the winter. Weather, clear and warm.

April 6.—Same party remained at the Snake River Station to wait for Scout Morrison and party to return from the Falls River country. Weather, clear and warm, but very stormy towards evening.

April 7.—Party still remaining at station, waiting for Scout Morrison and party. Scout Morrison and party returned from Falls River country to-day. Weather, very stormy, but not cold.

April 8.—Remained at Snake River Station. Weather, cloudy; temperature, warm.

April 9.—Left Snake River Station with Scout Morrison, Sergeant Leob and Private Carter of Snake River Station, and Privates Canivan and Price of Mud Geyser Station, and proceeded to Shoshone Geyser Basin. Camped near the Union Geyser. Saw signs of 6 or 7 elk on Polecat Creek. Weather, clear; temperature, warm. Thirty miles.

April 10.—Same party left Shoshone Geyser Basin and proceeded to Upper Geyser Basin lunch station via Lone Star Geyser. Left camp 4.40 a. m.; arrived Upper Basin 8.30 a. m. Saw no sign of any large game. Saw no sign of anybody having been in that country this winter. Saw one pine marten at Upper Basin. Weather, cloudy; temperature, warm.

April 11.—Same party left Upper Geyser Basin and proceeded to Lower Geyser Basin or Fountain Hotel. Five miles from Upper Basin, on the road to the Fountain Hotel, we saw a trail across the road, and, to the best of my knowledge, it was a trail made by buffalo, but could not tell how many of them had made the trail, it being about three or four days old. I think they were going north; there were at least 3 of them on the trail. Toward Mary's Mountain there are a great many elk signs between the Excelsior Geyser and the Fountain Station. There is a great deal of bare ground between the Upper and Lower Basins and snow is very soft. We had to wade about one-half of the way. We went to the station and remained over night with Corporal Holman. Weather, clear; temperature, mild. Ten miles.

April 12.—Left Fountain Station with Scout Morrison, Sergeant Leob, and Private Carter of Snake River, and proceeded to Norris Station. Stayed there over night. There is about 6 miles of bare ground between Fountain and Norris Basin. Saw a few elk sign in Gibbon Canyon. Privates Canivan and Price left me at Fountain Station to go back to their station at Mud Geyser; they will go over Mary's Mountain and through the Hayden Valley. We arrived at Norris about 8.30 a. m. Weather, clear; temperature, warm. Twenty miles.

April 13.—Same party left Norris and proceeded to Fort Yellowstone. Left Norris at 3 a. m.; arrived at post at 8.10 a. m. Saw no game on road. The snow is going very fast. This entire trip from March 30 to the present day has been made on skis and covers a distance of about 235 miles in all. All the game I have seen is in very good condition. The rations in the Beaverdam and Crawford cabins are in bad condition, except the coffee. The mice and rats have got into the boxes and have eaten up some of them, and what they did not eat they have spoiled. Private Price of the Mud Geyser Station is a very good man to have on such a trip. Private Montgomery went snow-blind at the Crawford cabin and could hardly get to Snake River Station. We had to walk into the post from Golden Gate. Weather, clear; temperature, warm. Twenty miles.

April 14.—Left the post with Scout Morrison, mounted and went to Cinnabar, then back to the post. Saw 36 blacktail deer near the Boiling River; 30 antelope—22 opposite the Boiling River, 8 on the Gardiner Flat. Saw a fire burning about 300 yards north of the park line near the Gardiner Ice Lake. Weather, clear and warm.

April 15.—Left post, mounted, and went around Mount Everts to try and locate the mountain sheep. Saw 7 near the coal bank, 4 on Turkey Pen, 4 on east end of Mount Everts. Saw 65 blacktail deer—7 about 200 yards east of post hospital, 4 on McMahon Creek, 10 on Turkey Pen road, 1 on Red Mountain, 10 on Cooke City road on East Gardiner River, 21 on west slope of Mount Everts, about 600 yards east of Boiling River, 12 opposite the Boiling River. Saw 67 antelope on Turkey Pen road, 27 near the coal banks, 19 opposite Boiling River; 5 bull elk at the top of the Gardiner grade. Weather, clear; temperature, hot.

April 16.—Left post, mounted, and went over old road to Reese Creek. Saw 11 mountain sheep on top of Mount Everts, about 150 antelope on the Gardiner Flat, 7 whitetail deer 1 mile west of Gardiner and about 300 yards north of park line. Weather, cloudy and rainy at Cinnabar; temperature, mild.

April 17.—Remained in post. Weather, cloudy; temperature, warm.

April 18.—Remained in post. Roached pack mules in the forenoon. Weather, clear and warm.

April 19.—Remained in the post. Weather, clear; temperature, warm.

April 20.—Went to Livingston, Mont., with Scout Morrison, on the case of Frank Bezere for killing elk, to give our testimony in said case. Weather, rainy; temperature, cold at Cinnabar.

April 21.—Attended court in Livingston, Mont., to give testimony against Frank Bezere, defendant; he was found "not guilty." Weather, cloudy; temperature, warm.

April 22.—Returned from Livingston, Mont., to Fort Yellowstone and reported for duty to the commanding officer. Arrived at post at 2.45 p. m. At 5.45 p. m., left post with Sergeant Welch and 2 pack mules and went to Gardiner to get some Tom Moore pack saddles; returned to post at 9 p. m. Saw 14 blacktail deer between Boiling River and the Government ice house. Saw 4 mountain sheep at Eagle's Nest, about 150 antelope on the Gardiner Flat. Weather, cloudy and rainy in Gardiner and Cinnabar; temperature, mild.

April 23.—Left the post, mounted, with Sergeant Welch, Private Hemstead and Private Holt of H Troop, and 4 pack mules and 2 lead horses, and proceeded to Norris Station. We left post at 9.45 a. m., arrived at Crystal Spring 1.15 p. m. Left Crystal Spring at 2.10 p. m., arrived at Norris 5 p. m. We made the trip in about six hours travel, which was remarkably good time, this being the first mounted party to make the trip this spring. There was about 5 miles of pretty deep snow, but it was so soft that a horse could pass right through it without much trouble; the rest was easy traveling. Private Helm met us at Bijah Spring. We saw several bear tracks on the road between Twin Lakes and Norris. Weather, clear; temperature, hot.

April 24.—Left Norris, mounted, with Private Hemstead and 2 pack mules and went to the Riverside Station. There was not a great deal of snow on the road in the 26 miles we traveled. We did not go through more than 4 miles of snow, and it was so soft that it was just like going through so much water. The ground is very soft in some places. There is some fallen timber and a great many rocks in the road in Gibbon Canyon; in fact, the road is in very bad condition for a team to get over them before they are repaired. Saw about 50 elk at the forks of the Gibbon and Firehole rivers, 3 fresh bear tracks in Gibbon Canyon, several in Madison Canyon. From Norris Sergeant Welch and Private Holt took 2 mules and returned to the post. I wired the Fountain men to meet me at the forks of the road and take their led horse to their place until I came back from Riverside. I met Corporal Holman in the Madison Canyon going to his station. Weather, clear; temperature, very hot, and does not freeze any at night.

April 25.—Left station with Sergeant Bernstein, mounted, and rode north to Maple Creek, then returned to station. Saw some fresh elk sign in the fallen timber close to Maple Creek. Sergeant Bernstein showed me where 3 elk were killed last December. They were inside the park about 8 miles north of the station, or 1 mile west of north. Sent Private Norvell and Private Will into the post from here, so that they would not have to go to the Fountain. Decided to hold Private Ornes and the mules over to-day; the stock was a little tired. There is no snow to speak of around here or Sand Butte, but the ground is very soft and a horse mires down very easy. It would be very hard for any poacher to get into the park just now. Weather, clear; temperature, hot.

April 26.—Left Riverside Station with Sergeant Bernstein, Private Ornes, and Private Hemstead, and went to Fountain Station. At the forks of the road, I sent Private Hemstead to Norris. Saw a great many fresh elk tracks in Gibbon Canyon. The roads are drying up very fast. There is no snow around this place. Weather, clear; temperature, hot; high wind blowing.

April 27.—When I got up this morning I found my horse and the 2 mules gone; began to look for them and found they had gone to Norris. I saddled up Private Ornes's horse and went after them. It was 11.30 a. m. before I got to Norris. I started back at 1 p. m.; arrived here at 5.10 p. m. I sent Privates Burdette and Stitham on their way to the post and told them to take Private Hemstead with them when they left Norris and I would take Private Ornes and go clear through to the post to-morrow with the pack mules. The wind storm of yesterday did a great deal of damage in the Gibbon Canyon to the telephone line. It is broken in about 25 places and down for about one-half mile in some places and there are at least 100 fallen trees across the road, and the most of them will have to be cut out before a wagon can get through. In my orders for this trip, I was ordered to take Corporal Holman from the Fountain and make a trip on skis up to Bear Parks, stay there over night, and next day go out as far as possible and return to cabin again. Not being able to make the trip at present on account of sickness, I decided to go to the post and report the fact to Lieutenant Lindsley. I could not get any message over the telephone because the wires were down. There has been a band of elk come up the road from the Madison Canyon to the Twin Buttes. There are about 500 elk in this vicinity. One fresh beaver sign in Nez Perce Creek about 2 miles above the station. Weather, clear; temperature, hot. Distance, 40 miles.

April 28.—Left station with Private Ornes and Private Sybert, mounted, with 2 mules and proceeded to Fort Yellowstone. Left Fountain at 7.30 a. m.; stopped at Norris for dinner; left Norris at 1.30 p. m. Saw where 2 elk crossed the road at Crystal Spring, 2 at Obsidian Cliff; several fresh beaver signs in the road between the Fountain and Crystal Spring; 4 Elk on Swan Lake flat. The telephone wire is down very badly all around the park. Very little snow between Norris and the post. Weather, cloudy; temperature, warm.

April 29.—Remained in the post. Weather, cloudy; temperature, mild.

April 30.—Remained in the post on account of sickness. Cloudy, snowing a little; temperature, cold.

May 1.—Remained in the post on account of sickness. Weather, cloudy; temperature, cold.

May 2.—Left post, mounted, with Scout Morrison and made patrol to J. S. Knowles' cabin on the Yellowstone River. Saw about 300 elk near Blacktail Creek; 8 blacktail deer near the outlet of the creek; 5 antelope same place. The beaver on Lava Creek are not working any this spring—at least there are no signs of any work. The beaver in Blacktail Creek are doing some great work at present. They are building some fine dams on the creek, about 1 mile from its outlet. Weather, cloudy; temperature, cold.

May 3.—Left J. S. Knowles's cabin with Scout Morrison and returned to the post. Saw some signs of people fishing on the Yellowstone River above Mr. Knowles' place. They come up from Gardiner and camp over night in an old cabin near Knowles' place and fish from there. We saw 1 man fishing on the river on the east side, opposite mouth of Blacktail Creek; his name was Mike O'Brien, from Gardiner City. Saw 3 dead elk, last spring calves, near the Blacktail ford. Saw about 200 elk on Blacktail; 2 antelope same place. I saw 2 and Morrison saw 6 mountain sheep near mouth of Blacktail. Weather, cloudy and cold.

May 4.—Remained in the post, owing to sickness. Weather, cloudy; temperature, cold.

May 5.—Left post with Scout Morrison, mounted, to make a patrol to headwaters of the Gardiner River and Indian Creek, but could not get there on account of deep snow. Saw about 30 elk near Mr. Klamer's slaughterhouse on Swan Lake Flat. Weather, cloudy; temperature, cool.

May 6.—Left post, mounted, with Scout Morrison and 2 pack mules to make patrol to Hellroaring Creek. Camped at the mouth of Cottonwood Creek. Saw 2 men fishing on the Yellowstone River; they had about 30 pounds of fish between them. Saw quite a number of elk in the vicinity of Blacktail Creek. Saw 10 blacktail deer on the Cooke City road along the Gardiner grade. Met Lieutenant Lindsley with pack train at Blacktail Creek on his return to post from Soda Butte Station. Weather, cloudy; temperature, mild.

May 7.—Left camp on Cottonwood Creek and rode over to Hellroaring Creek. Saw 4 whitetail deer and 4 blacktail between Cottonwood and Hellroaring creeks. Found 2 dead bull elks that died this spring, and 7 that I believe were killed for their teeth alone; but they were killed last year if they were killed at all. Weather, clear; temperature, mild.

May 8.—Left camp and returned to the post. Saw about 25 elk on Blacktail Creek; 1 antelope same place; 10 blacktail deer on the Gardiner grade on Cooke City road. The Yellowstone River is very high at present; will be hard to ford from now on. Weather, clear; temperature, warm.

May 9.—Left post, mounted, and went to Gardiner City to get some pack saddles. Returned to post at 7 p. m. Saw 11 mountain sheep on Mount Evarts, opposite Boiling River; 1 at the Eagle's Nest. Weather, clear; temperature, warm.

May 10.—Remained in the post to fix up the pack-train outfit for use. Weather, cloudy; temperature, warm.

May 11.—Remained in the post to work on the pack train. Weather, clear; temperature, warm.

May 12.—Remained in the post on account of sickness. Weather, clear; temperature, warm.

May 13.—Left the post with Mr. A. E. Burns to make patrol on Reese Creek. Mr. McMahon informed me that A. K. Crawford was up on Reese Creek last Sunday. We followed up the creek and saw where somebody had gone up into the park, but they came out again. I presume they were trying to get into the park. We saw 5 deer near the Boiling River. Weather, clear; temperature, warm.

May 14.—Left post, mounted, with A. E. Burns and 1 pack mule, and proceeded to the headwaters of Glen Creek; camped there over night. Saw 6 elk on the west slope of Sepulchre Mountain. Weather, clear; temperature, warm.

May 15.—Left camp on Glen Creek, and went to head of Reese Creek, down said creek to the McMahon ranch, then to the Gassert ranch, then along the foot of Sepulchre Mountain to the post. Saw 13 deer at the old brickyard on the old Gardiner road, 3 near the Transportation barn. Weather, cloudy; hard rain falling around

Electric Peak. There are quite a number of bear signs and fresh elk signs also. There are about 25 head of cattle and a few horses running on the park southwest of Gardiner City. There has been nobody through the Electric Peak Pass yet, but there are some fresh horse tracks along the park line on Reese Creek.

May 16.—Remained in the post on account of sickness. Weather, cloudy and rainy; temperature, cool.

May 17.—Went to Gardiner and returned to the post; saw 3 deer near the old brickyard; intended to start for Yancey's in the afternoon, but the weather was bad, so received orders to wait until morning. Weather, cloudy and rainy; temperature, mild.

May 18.—Left post with A. E. Burns, mounted, and 3 pack mules, and proceeded to Yancey's Hotel; saw 2 deer on the new Cooke City road, 4 near the halfway place, 4 in the Devils Gut, 4 antelope near the Blacktail Creek; also a great many elk scattered along the road to Yancey's—at least 400 of them. The beaver in the Blacktail Creek have not been molested this spring and they are doing a great deal of work all along the creek. In the vicinity of Yancey's place the beaver are increasing very rapidly; all the small creeks have beaver in them now; they are doing a great deal of work at present and have not been molested by anyone. Weather, cloudy and rainy; temperature, mild.

May 19.—Remained at Yancey's owing to the inclement weather; also to prospect the beaver dams in all the creeks around here; found them all in good condition and beaver doing a great deal of work on them; saw 25 elk near the hot spring, 2 miles southeast of Yancey's. Weather, cloudy; drizzling rain all day; temperature, mild.

May 20.—Left Yancey's and proceeded to Soda Butte; saw about 3,000 elk between Yancey's and Soda Butte, 37 antelope between Junction Butte and Little Specimen Creek, 17 deer near the Junction Butte. The beaver are doing a great deal of work in the streams around this district. Weather, cloudy and very stormy; temperature, cold.

May 21.—I remained at the station while Burns went up to Death Gulch and Cache Creek. Private Edwards went to Hellroaring Creek; Herb went with Burns. Privates Root, McDonald, and Palmer arrived to-day to relieve the present detachment. Herb and Burns report 11 dead bear in Death Gulch. Weather, cloudy; temperature, mild.

May 22.—Left station with A. E. Burns and went to J. S. Knowles' cabin on Crevasse Creek. Private Hardin and Private McDonald left station ahead of me to meet Private Edwards on Slough Creek; we met them all at that place. Slough Creek and Hellroaring Creek are up pretty high, but we had no difficulty in crossing them. On our way down the river I saw a man fishing along the bank, about 150 yards above the ford; did not say anything to him, but came down to the old cabin below Knowles' place, and there I found a man camped. I asked him what he was doing and he said himself and 2 other men were fishing. I went into the cabin and found about 20 pounds of fish hanging up in a secluded place. Everything looked rather suspicious to me; the man at the cabin said the other two were out fishing; but I saw 2 poles and 2 sacks at the cabin, and I concluded he was not telling the truth about the matter. I had come down the river myself and saw but one man, while the other ones were not there, as he had told me. They had been here three days—two of them—while the third one had come up last night. I told them they would have to stop fishing and return to Gardiner. They leave to-morrow morning. Saw about 2,500 elk between Soda Butte and Cotton Creek; 2 deer and 7 antelope on Slough Creek. Weather, cloudy; hard rain in the evening; temperature, mild.

May 23.—Left camp at J. S. Knowles', and proceeded to Fort Yellowstone. Before leaving camp, I went down to see if the 3 men who were fishing had left their cabin; found they had gone. When we went through Gardiner, I saw them there. Saw no game. Weather, cloudy and raining hard part of the day; temperature, cold.

May 24.—Remained in the post until 3 p. m., then took Private Kelner and 1 pack mule and went to J. S. Knowles' cabin on Crevasse Creek with order from the commanding officer and Acting Superintendent of the park to destroy all the cabins around Knowles' place. I burned 4 of them; 1 belonged to Tom Miner, 1 to Charles White, 1 to David Borem, and 1 to J. S. Knowles. I moved everything out before setting them on fire. Saw quite a number of grouse on Crevasse Mountain. John Ballinger is camped about one-half mile from the park line; saw where he had been in the park on foot on Crevasse Mountain. Weather, cloudy; temperature, cool.

May 25.—Left Knowles' to return to the post. Before leaving I looked at all the cabins that had been burned to see that there was no danger of fire spreading; found them all about out. The Yellowstone River is very high and muddy. Saw 1 deer, 1 mile north of the post. Weather, cloudy; temperature, cool.

May 26.—Left post and went to H. E. Klamer's slaughterhouse and stayed there over night. Weather, cloudy; temperature, cold.

May 27.—Left slaughterhouse and rode up almost to the pocket on Fawn Creek.

The beaver have not done any work on this creek this spring. Three dams have been torn out, but it has been done a year or two ago. Saw about 300 elk on Fawn Creek and 27 on the Gardiner River. The beaver in Gardiner River are doing some work; but, owing to the high water, it is hard to tell how many there are in the district. Weather, clear; temperature, mild.

May 28.—Left post with Private Williams, of D Troop, and returned to the Gardiner River, then up Indian Creek to the foot of Bighorn Pass. The beaver are doing some work at present and have not been molested this spring, or up to the present time. There are about 500 elk near the headwaters of Indian Creek, 57 on Panther Creek, and 7 on Gardiner River. Left post at 7.45 a. m., returned at 3.30 p. m. Weather, cloudy; raining part of the day, and very cold.

May 29.—Remained in the post. Weather, cloudy; temperature, cool.

May 30.—Left post and went to Gardiner and Cinnabar. Returned to post this afternoon; went down to gather information. Weather, cloudy, stormy, and cold.

May 31.—Owing to no appropriation being made, I was laid off; this is the end of my scouting duty.

[James G. Morrison.]

March 26, 1898.—Remained at post. Weather, stormy; temperature, mild.

March 27.—Remained at post. Weather, clear; temperature, cold.

March 28.—Remained at post. Weather, clear; temperature, mild.

March 29.—Remained at post. Weather, clear; temperature, mild.

March 30.—Scout Whittaker and myself left post for Snake River Station. Stopped at Norris over night. Weather, cloudy; temperature, mild.

March 31.—Left Norris for Canyon. Weather, clear; temperature, mild.

April 1.—Went to the lake from Canyon, stopping at Mud Geyser for luncheon, and taking Privates Price and Canivan with us. Met Sergeant Leob, Privates Carter and Montgomery, from Snake River, at lake. Saw about 50 swan, 4 foxes, 2 coyotes. Weather, clear; temperature, mild. Distance, 17 miles.

April 2.—Scout Whittaker, Privates Canivan, Price, and Montgomery left Lake Hotel for Beaverdam cabin. Myself, Sergeant Leob, and Private Carter left Lake Hotel for Snake River Station; stopped over night at Thumb. Weather, clear in the forenoon, cloudy in the afternoon, and a little rain in evening; temperature, mild. Distance, 15 miles.

April 3.—Left Thumb for Snake River Station. Stopped at Lewis River cabin for lunch. Saw signs of 1 elk at Thumb and sign of a moose on Warm Spring Creek, about 2½ miles from Snake River Station. Weather, cloudy; temperature, mild. Distance, 27 miles.

April 4.—Stayed at Snake River Station. Weather, clear; temperature, mild.

April 5.—Privates Carter, Wharam, and myself left station. Went to Grassy Lake on road that leads to Falls River. Left the road there, turning southwest, coming out in Falls River Basin between Loon Lake and a lake about 2½ miles south of it, on a creek which has no name. Continued southwest about 3 miles and made a camp. Left Private Wharam in camp and went with Private Carter about 3 miles, coming out in a large flat, which extends northeast and southwest. On southwest end of flat we saw a shack which we went to and found a log house about 20 by 30 feet. Northwest of house is a log stable about 20 by 50 feet, alongside of which are two large haystacks. South of the house and stable about one-half mile are three stacks more. I believe these are all in the timber reserve about 1½ miles. There were no signs of anyone having been there or around there this winter. The streams in this country are all open, but saw no signs of beaver. Saw 2 mountain lion tracks. After finding cabins and hay Carter and myself returned to camp. Weather, clear; temperature, mild. Distance, 28 miles.

April 6.—Left camp, traveling northwest, striking Falls River near junction of Bechler River; thence up Falls River to Mountain Ash Creek, crossing the river, and up Mountain Ash Creek to cabin on same. Saw fresh signs of moose on Falls River near where we struck it; also fresh sign on Mountain Ash Creek, near cabin. Weather, clear in a. m., cloudy in p. m., snow in evening; temperature, mild. Distance, 22 miles.

April 7.—Left cabin on Mountain Ash Creek for Snake River Station; on arriving there found Scout Whittaker awaiting me with his detachment, having come from Upper Yellowstone. Saw signs of beaver in Proposition Creek. Weather, cloudy and snow; temperature, mild. Distance, 18 miles.

April 8.—Stayed at Snake River Station. Weather, stormy; temperature, mild.

April 9.—Sergeant Leob, Scout Whittaker, Privates Carter, Canivan, and Price, and myself left station, going over Pitchstone Plateau to Shoshone Geyser Basin. In going up Pole Cat Creek saw signs of 6 or 7 elk; sign of 1 in geyser basin. Weather, clear; temperature, mild. Distance, 30 miles.

April 10.—Same party left Shoshone Geyser Basin, going up Shoshone Creek about 3 miles; thence across to Firehole River, down it to Lone Star, there to road and to

Upper Basin. Saw signs of large game to-day. Weather, clear in forenoon, cloudy in afternoon; temperature, mild. Distance, 15 miles.

April 11.—Same party left Upper Basin, went to Fountain, walking about one-third of the way. Saw trail across road about 4 miles from Upper Basin of buffalo. I think there were 3 of them, but trail was about four days' old and in deep snow, and the number may not be accurate. Many signs of elk between Upper Basin and Fountain. Weather, clear; temperature, mild. Distance, 10 miles.

April 12.—Same party left Fountain for Norris. Saw signs of about 10 elk in Gibbon Canyon. Weather, clear; temperature, mild. Distance, 18 miles.

April 13.—Same party left Norris for Springs. Saw signs of beaver working on Willow Creek. Weather, clear; temperature, mild. Distance, 20 miles.

April 14.—Went to Cinnabar, Mont., to serve subpœnas on James Hawk and Frank Scott. Weather, clear; temperature, mild.

April 15.—Left post for station on Swan Lake Flat. Weather, clear; temperature, mild. Distance, 5 miles.

April 16.—Sergeant Welch, Private Holt, and myself left station, going west on Gardiner River, down it to mouth of Indian Creek, back to station along ridge east of river. The river is open in many places. Some signs of beaver working. Weather, clear; temperature, mild. Distance, 12 miles.

April 17.—Sergeant Welch, Private Holt, and myself left station, going west to Gardiner River, up it about 3 miles, then west across ridge to Fawn Creek, down it to mouth, back to station along ridge east of river. The river is open in many places and much sign of beaver work, one very large dam having been built this spring. Saw 29 elk near mouth of Fawn Creek. Weather, cloudy and snow; temperature, mild. Distance, 19 miles. Left station for post in evening.

April 18.—Remained at post. Weather, clear; temperature, mild.

May 3.—Scout Whittaker and myself left post, going out Cooke City road to Turkey Pen trail, down Blacktail Creek to Yellowstone River, crossing at ford, thence down river to Knowles place, stopping there over night. Examined beaver dams on Blacktail and found them undisturbed. Saw about 350 elk, 8 blacktail, 2 antelope on or near Blacktail. Weather, cloudy; temperature, cold; distance, 14 miles. We left Knowles, going up river to ford. Saw Mike O'Brien near ford fishing. He said he came from Gardiner this a. m. Crossed river, thence up Blacktail Creek to road, and thence to post. Saw about 200 elk, 2 antelope, 2 coyotes, 3 blacktail deer. Weather, cloudy; temperature, cold. Distance, 14 miles.

May 4.—Went part way to Gardiner and back to post on bicycle. Weather, cloudy; temperature, cold.

June 21.—Left post with Private Price for Gallatin; went up Fawn Creek through Fawn Pass; about 3 feet of snow in pass; camped on Gallatin River north of Crowfoot Ridge. Saw 12 elk near head of Fawn Creek; fresh signs of beaver on Fawn Creek opposite pocket. Distance, about 21 miles; weather, clear and warm.

June 22.—Left camp on Gallatin, going down it to where it turns north, then back northeast to head of Stellaria Creek, down to its mouth, and then down Fan Creek to mouth of it, camping on Gallatin River. Saw 1 cow elk on Stellaria Creek; no signs of beaver on any of the streams. Nobody has been in this country this spring. Weather, cloudy and warm. Distance, 14 miles.

June 23.—Leaving the camp on Gallatin, went down the river about 2 miles, when we struck fresh trail of three horses coming up and going back again. Followed trail about 2 miles down Gallatin; there it turned up a small creek coming in from the west; up it about one-half mile found a man in camp, Haskell by name, who had located a mining claim. He is camped about on or near park line (west). Had no horses; said his partner, Curtis, who lives on Gallatin about 3 miles outside of park, had gone to Bozeman for more provisions. Says he has been at his present camp since April 25. Showed us where the cabin was, and I think about one-half of it is in the park. Saw no sign of him doing any trapping or hunting; he had no gun, but plenty of picks and shovels. He is prospecting for George Alderson, of Bozeman. On the 15th he saw 2 men with 2 pack horses and 1 pack mule going up the Gallatin River. Says his partner, Curtis, told him it was "Scotty" and another man from Horr. I followed the trail he showed me up the Gallatin to near the mouth of Fan Creek; there it turned east. Will continue on trail up Fan Creek to-morrow. Saw 1 fish otter in Gallatin River near mouth of Baconrind Creek; while watching him he caught 2 fish. Distance, 17 miles. Weather, cloudy and rainy.

June 24.—Left camp on Gallatin, going up Fan Creek. Saw no signs of trail until I got up about 3 miles, then saw some trail had been made on Gallatin. It made for the pass between Fan Creek and Sportsmans Lake; followed it down Mulharen Creek to park line. Saw signs of fishing in lake. Saw no game to-day. Camped about on north line of park. Weather, cloudy and rainy. Distance, 15 miles.

June 20.—Left post with Privates Wigman and Canivan. Went to Yancey's. Saw no game. Weather, cloudy and rainy. Distance, 20 miles.

July 1.—Left Yancey's, going across bridge of Yellowstone. Camped on river. Saw 9 antelope. Weather, clear. Distance, 8 miles.

July 2.—Left camp on Yellowstone River, going up point of Specimen Ridge and along it to head of Deep Creek. Camped on head of Deep Creek. Saw 29 antelope and 1 elk. Weather, clear. Distance, 18 miles.

July 3.—The 3 pack mules took back trail to Yancey's, Wigman and myself following them, and got them at Yancey's. Stayed there over night, Canivan staying in camp. Saw about 50 antelope on Specimen Ridge. Weather, clear. Distance, 26 miles.

July 4.—Wigman and myself returned to camp on head of Deep Creek. Saw about the same antelope as on 3d. Weather, clear. Distance, 26 miles.

July 5.—Broke camp on Deep Creek, going over Mirror Plateau, crossing head of Opal Creek, then to Timothy, then over to head of Pelican Creek. Camped there. Saw no sign of buffalo. Saw about 5 cow elk with calf and 7 bulls. Distance, 17 miles. Weather, clear.

July 6.—Left the camp on head of Pelican Creek, went west to a small creek that flows into Broad Creek, down it to near its mouth, thence down Broad Creek about 2 miles, thence northeast to hot springs on Shallow Creek, up Shallow Creek to Wapiti Lake, thence east to camp. Saw signs of 3 buffalo (fresh), 2 on the small creek that flows into Broad Creek and one at Wapiti Lake. Saw 15 elk, all cows. Weather, clear. Distance, 15 miles.

July 7.—Left camp on head of Pelican Creek, went down it about 5 miles and made camp. In the afternoon went over to Fern Lake, around it to head of Sour Creek, down it, then followed fresh buffalo trail over ridge to Broad Creek, up it to Fern Lake and on to Tern Lake, from there to camp. Saw one buffalo; jumped 5 buffalo near ford of Broad Creek, following them to Fern Lake, where we saw the one, an old bull, on one of the heads of Sour Creek. Around Ponuntpa Springs there were fresh signs of the band I saw there last winter. I think there are 30 buffalo in this country we came through. Saw about 100 elk. Weather, cloudy and rainy. Distance, 20 miles.

July 8.—Moved camp to Growler, on Plateau Creek. Leaving camp, went up East Fork of Pelican. Saw where 5 or 6 buffalo wintered near forks of Pelican Creek, but no fresh signs. Saw about 150 elk. Weather, clear. Distance, 14 miles.

July 9.—Broke camp and continued down Pelican Creek to the Yellowstone Lake; camped on lake shore about 1 mile from Lake Station. Saw about 100 elk on Pelican, mostly cows with calves, and 16 sand-hill cranes. Weather, clear. Distance, 16 miles.

July 10.—Left camp, going down the Yellowstone River to Canyon; camping there. Saw a black bear on north side of river. Weather, clear. Distance, 18 miles.

July 11.—Went to Norris. Weather, clear. Distance, 11 miles.

July 12.—Went to post. Weather, cloudy and rainy. Distance, 20 miles.

[Fountain Station, 1897.]

November 12.—Holman left station at 8 a. m., crossed the Firehole at footbridge west of the station, followed up Sentinel Creek to its source, and returned to station over same route. Saw tracks of deer and elk. Great many beaver in Sentinel Creek. Distance, 14 miles. Object, scouting.

November 13.—Burdett left station at 8.30 a. m. Followed the road to the Fountain Geyser, from there to Black Warrior, Great Fountain and Excelsior, from there traveled east following a small stream which flows from a basin about 3 miles from Excelsior Basin. Game, tracks of deer and elk.

November 15.—Holman left station at 8 a. m., crossed the Firehole River at wagon bridge which is southwest from the station, followed up Fairy Creek to the falls, and returned to station. Object, to ascertain if any buffalo had crossed going to Hayden Valley. Distance, 9 miles.

November 16.—Holman left station at 8.30 a. m., traveling north. Struck 1 mile west of Gibbon Falls. Followed wagon road to Norris and returned to station. Saw tracks of 1 mountain lion and 3 deer. Object, mail matter. Distance, 35 miles.

November 18.—Holman left station at 8 a. m.; followed trail to Summit Lake cabin, traveled along the west side of Bear Park, and returned to station. Distance, 30 miles.

November 19.—Holman and Burdett left station, 8 a. m., and followed trail to Bear Park; they returned to station, blazing the trail on return trip. Distance, 24 miles. Object, to blaze the trail.

November 23.—Halmon and Stitham left station at 8 a. m., following the road to Firehole Falls; there one man dismounted and followed down the river to its junction with the Gibbon, the other man followed the road, leading one horse. Saw no sign of beaver below the falls; some beaver signs between the falls and the troop camping grounds.

November 24.—Burdett left station 9 a. m.; followed Nez Perce Creek up to the mouth of Magpie; returned to the station over the same route. Distance, 14 miles.

November 27.—Holman left station at 9 a. m., mounted; traveled north and struck Gibbon River below the falls, following down the river on the north side to the junction and then followed the road to the station. Saw some bear signs 1 mile from the junction. Distance, 22 miles.

November 29.—Stitham left station 9 a. m., mounted, following the old road to Mary's Lake and returning to station by the same route. Distance, 20 miles.

November 30.—Burdett left station 9 a. m.; followed wagon road to Norris Station. Object, mail. Distance, 38 miles.

December 3.—Holman and Stitham left station at 7 a. m. on skis. Followed the trail to Summit Lake cabin; arrived there at 7 p. m. The following morning, after putting in wood enough to last one night, we left the cabin and traveled around Bear Park, keeping on the west side. From there we traveled northwest to Lower Bear Park; after scouting through it we returned to station. Saw no sign of buffalo; 15 elk near Twin Buttes, 3 deer near Fairy Falls. Distance traveled, 40 miles. Weather, clear.

December 6.—Mathieson and Stitham left station at 1 p. m. and followed road to Riverside. Stayed there over night and returned to station. Saw several beaver in Madison River; 175 elk in Madison Canyon. Distance, 34 miles. Weather, stormy.

December 10.—Holman and Mathieson left station on skis at 8 a. m. Followed up Nez Perce Creek to Magpie Creek and returned to station. Object, scouting. Distance, 14 miles. Weather, cloudy.

December 11.—Holman and Stitham left station, 8 a. m., on skis. Crossed the Firehole River on the footbridge west of the station; followed up Sentinel Creek to the head of the Queens Laundry and returned to station. Distance, 8 miles. Weather, snowing. Saw tracks of elk.

December 12.—Holman left station at 9 a. m., mounted. Followed the road to Excelsior Geyser. From there traveled southeast to a point 5 miles from Excelsior and returned to station. No sign of game. Distance, 20 miles. Weather, clear.

December 13.—Holman left station at 8 a. m. Traveled southeast to Juniper Creek and returned to station. No sign of game. Distance, 14 miles. Weather, cloudy.

December 14.—Burdett and Mathieson left station at 1 p. m. Traveled southwest to Fairy Falls and returned to station. Transportation, skis. Distance, 8 miles. Weather, clear.

December 17.—Mathieson and Stitham left station 8 a. m., followed old road halfway to Riverside and returned to station. No game. Distance, 17 miles. Weather, cloudy.

December 18.—Holman left station at 8 a. m., mounted. Traveled east to Canyon Creek and returned to station. Distance, 18 miles. No game. Weather, cloudy.

December 21.—Mathieson and Stitham left station, 9 a. m., on skis, followed Nez Perce Creek to foot of Mary's Mountain, and returned to station. Distance, 20 miles. No game. Weather, cloudy.

December 22.—Holman and Stitham left station, 9 a. m., crossed the Firehole River at the footbridge, followed up Sentinel Creek to its source, and returned to station. No game. Distance, 15 miles. Weather, clear.

December 24.—Burdett and Mathieson left station, 1 a. m. Traveled southeast and struck a deep canyon about 5 miles from the station, followed the canyon to the Black Warrior, and followed the wagon road to the station. Saw tracks of 15 elk. Distance, 15 miles. Weather, clear.

December 27.—Mathieson and Stitham left station, 7 a. m.; followed the blazed trail to Summit Lake cabin, stopped there one night, and returned to station. No game. Distance, 30 miles. Stormy scouting.

December 29.—Holman, Mathieson, and Stitham worked at the ice house.

December 30.—Burdett and Stitham left station, 12 m.; followed the Firehole to the falls, and returned to station. Saw some bear tracks across the road. Distance, 10 miles. Weather, clear.

[1898.]

Holman and 4 men worked at ice house from January 3 to January 6, putting up about 20 tons of ice.

January 6.—Holman, Burdett, P., and Burdett, C., left station, 8.15 a. m. Followed the old road to Riverside. Stopped there one night. Holman and Burdett, P., returned to station. Object of trip to accompany Burdett, C., to his station. Distance, 34 miles. Weather, snowing. Saw tracks of 75 elk in Madison Canyon.

January 8.—Mathieson and Stitham left 9 a. m., following down the Firehole to the falls, and returned to station. Saw 25 geese and 40 ducks. Weather, stormy.

January 10.—Holman and 3 men worked at ice house.

January 12.—Burdett, Mathieson, and Stitham left station at 9 a. m., crossed the

Firehole River at the first bridge, followed up Sentinel Creek to the beaver dams, and returned to station. Saw 12 geese, 25 ducks, and 1 swan. Distance, 10 miles.

January 13.—Holman, Burdett, and Mathieson left station 8.30 a. m; followed Nez Perce Creek to the foot of Mary's Mountain, and returned to station. Saw 1 beaver, 3 elk, and 19 ducks. Tracks of 50 elk. Distance, 20 miles. Weather, snowy.

January 14.—Holman and Stitham left station at 11 a. m; followed the road to Canyon Creek, and returned to station. Saw 12 ducks. Lieutenant Lindsley and Scout Morrison arrived from Riverside.

January 15.—Mathieson left the station at 8 a. m. and followed the telegraph line to Canyon Creek, where he met Private Holt, who was ordered here from Norris, and returned to station. Distance, 18 miles. Weather, clear.

January 16.—Lieutenant Lindsley and detachment left for Snake River via Upper Basin and Thumb, taking 2 men, mounted, from here, as far as the Upper Basin, with rations.

January 17.—Burdett and Mathieson returned from Upper Basin. Saw 50 ducks on Firehole River. Weather, cloudy.

January 18.—Mathieson and Syberty left at 8 a. m. on skis; traveled northeast, and struck Magpie Creek about 4 miles from its mouth; followed this stream to its junction with the Nez Perce, thence west along the Nez Perce to the station. Saw 3 elk. Weather, clear; distance, 18 miles.

January 19.—Holman and Burdett left station 9 a. m. on skis; followed the road to Norris Station, remained there one day, and returned to station on the 21st. Object, mail.

January 24.—Holman, Burdett, and Mathieson left station at 7 a. m. and followed the road to the Upper Basin; stayed there one night, and left the next day at 7 a. m.; scouted through the Black Sand and Biscuit basins, and returned to station. Weather, clear; distance traveled, about 30 miles.

January 28.—Holman, Burdett, and Syberty left station 1 p. m.; crossed the Firehole River at the footbridge and followed Sentinel Creek to the Queen's Laundry, thence south to Twin Buttes, thence east to the river, and followed the river to the station. Distance, 10 miles. One hundred ducks in the river. Weather, clear.

January 31.—Holman, Burdett, and Mathieson left station at 8 a. m.; followed up Nez Perce Creek to the mouth of Juniper Creek, and then followed up Juniper to the hot springs, thence east to Spruce Creek and down Spruce to its junction with the Nez Perce, thence west along the Nez Perce to the station. Saw tracks of 10 elk and some beaver signs in Spruce Creek; also saw a great number of geese, ducks and fishes in and along the streams. Distance traveled, about 20 miles. Weather, fine.

February 2.—Burdett and Syberty left station at 8 a. m.; followed the road to Canyon Creek, and returned to station. Object, breaking trail.

February 3.—Burdett and Syberty left station at 7 a. m. on skis; followed the old road to the foot of Mary's Mountain, and returned to station. Object, to meet Holt and Stitham, who were coming in from Mud Geyser. Weather, snowy.

February 6.—Holman, Burdett, and Syberty left station at 9 a. m. mounted; followed the road to Madison Canyon, and returned. Saw tracks of 100 elk. Distance, 16 miles. Weather, stormy.

February 7.—Stitham and Syberty left station at 8 a. m.; followed road to Canyon Creek, and returned to station. Object, breaking trail. Cloudy.

February 8.—Holman, Burdett, and Syberty left station at 8 a. m.; followed up Nez Perce Creek to the mouth of Magpie Creek, thence north along Magpie to a point 5 miles from its mouth, and returned to station over the same route. Saw tracks of 5 elk. Distance, 20 miles. Object, scouting.

February 9.—Holman, Burdett, and Syberty left station at 9 a. m., following the old road to Mary's Lake. After scouting along the foot of the mountain two hours, we returned to the station. Saw 20 elk. Distance, 24 miles. Cloudy.

February 10.—Holman, Burdett, and Syberty left station at 7 a. m. on skis; followed up Nez Perce Creek to the mouth of Spruce Creek, thence up Spruce Creek to the hot springs, and returned to station. Saw tracks of 10 elk. Distance, 24 miles. Weather, fine.

February 14.—Holman, Burdett, and Stitham left station at 7 a. m.; followed the trail to Summit Lake cabin, arrived there at 5 p. m. Saw 1 swan and tracks of 5 elk between the station and Twin Buttes. Distance, 15 miles. Weather, stormy.

February 15.—Left Summit Lake cabin at 9 a. m.; traveled south to Summit Lake, thence west to hot springs and then back to the lake, thence south to hot springs, 1 mile south of the lake, and then followed the trail back to the cabin. Saw tracks of 1 mountain lion. Distance, 10 miles. Weather, stormy.

February 16.—Left the cabin at 9 a. m., went northwest to Lower Bear Park, from here followed the trail to the station. Saw tracks of 10 elk near Twin Buttes. Distance, 15 miles. Weather, snowy. Object, scouting.

February 22.—Holman, Burdette, and Syberty left station at 9 a. m. with five day's

rations; followed the road to the Upper Basin; stayed there until the following morning; left there at 8 o'clock; followed the road to the Lone Star Geyser; there we took off our skis and waded the Firehole River and followed it to a point about 3 miles north of Madison Lake. Here we left the river and traveled southeast and struck Shoshone Creek 2 or 3 miles from the Shoshone Geyser Basin, where we made camp. Left Shoshone Creek the following morning; followed down the creek to the lake, and followed around on the side of the lake. Made camp on Heron Creek; left Heron Creek the next morning at daylight and struck the main road near the 9-mile post; followed it to the Upper Basin station and stayed there for the night. Left the Upper Basin the next morning and followed the road to the station. Saw 10 elk near Twin Buttes, tracks of 2 elk near the station. Saw no sign of game in Shoshone Basin. Distance traveled, about 67 miles. Weather, cloudy and snowing.

March 2.—Burdett, Mathieson, and Syberty left station at 9 a. m; followed up the Firehole River to the Biscuit Basin and returned to station via Great Fountain Geyser. Saw tracks of 15 elk. Weather, clear.

March 3.—Holman left station mounted, and followed up Nez Perce Creek to the foot of Mary's Mountain and returned to station. Saw tracks of 25 elk near the mountain. Saw 25 elk 2 miles from the station.

March 4.—Burdett, Mathieson, and Syberty left station at 8 a. m. and followed the road to the junction of the Firehole and Gibbon rivers; from there, followed up the Gibbon to a point about 5 miles from the falls and returned to station over the same route. Saw 200 elk near the junction of the rivers, and saw tracks of a great many elk. Distance, 24 miles.

March 10.—Holman, Burdett, and Mathieson left station at 8 a. m; followed the road to Norris, remained there one day, and left Norris on the morning of the 12th; followed the wagon road to the post; remained at the post two days to draw clothing. Holman and Burdett left the post on the morning of the 15th; followed the road to Crystal Springs, stopped there one night; on the following day followed the road to Norris; left Norris next morning and followed the road to the station. Distance traveled, 78 miles. Object, to accompany Mathieson to the post on account of expiration of his term of service.

March 19.—Holman and Syberty left station on skis; followed the road to the Upper Basin, stopped there overnight, and returned to station via Biscuit Basin. No game. Weather, snowing.

March 23.—Left station with one man, crossed the river on the foot bridge, followed up Sentinel Creek to the head of the Queen's Laundry, and returned to station.

March 26.—Holman and Syberty left station at 7 a. m.; followed the road to the junction of the Firehole and Gibbon rivers; from there followed up on the north side of Gibbon River to near the falls; crossed the river and followed the road to the 9-mile post from the hotel; left the road there, traveled south and struck the telegraph line and followed it to the station. Saw 15 elk along the Gibbon River. Saw tracks of 250 elk. Distance traveled, 22 miles. Weather, snowing.

March 29.—Holman, Stitham, and Syberty left at 6.30 a. m.; followed up Nez Perce Creek to the foot of Mary's Mountain; from there followed up a small stream that flows southward along the mountain to a point about 3 miles from its mouth; thence west to Magpie Creek, and then down Magpie to the road and followed the road to the station. Saw 1 elk and tracks of 15. Some fresh beaver signs in a small stream near the mountain. Distance traveled, 20 miles. Weather, fine. Object, scouting.

March 30.—Holman, Stitham, and Syberty left station at 7 a. m.; traveled southeast and came to a deep canyon about 4 miles from the station; followed down the canyon to the Black Warrior; from there traveled around the Great Fountain and near to the Excelsior, and followed the road to the station. Saw tracks of 3 elk near the station. Saw a stray horse at the Black Warrior. Distance, 12 miles. Weather, snowy.

April 2.—Stitham and Syberty left station 6 a. m.; followed the road to Norris station; there one night and returned to station. Object, mail.

April 5.—Holman, Stitham, and Syberty left station at 6.15 a. m; followed up Nez Perce Creek to Spruce Creek, thence up Spruce to the hot springs, thence north along the mountain to the old road, thence west to the station. Saw tracks of 25 elk; saw 2 coyotes and 1 red fox. Distance, 24 miles. Weather, fine.

April 8.—Holman, Stitham, and Syberty left station at 7 a. m. on skis; traveled southwest to Twin Buttes, thence northwest to the head of the Queen's Laundry, thence east to the station. Saw 7 elk near Twin Buttes; 5 coyotes; tracks of 10 elk. Distance, 10 miles. Weather, fine.

April 12.—Stitham and Syberty left station at 4.30 a. m.; followed up the road and struck buffalo trail 4 miles north of Upper Basin; followed trail up for 4 or 5 miles; lost the trail there, and then traveled south to the Upper Basin; stopped there for the night and returned to station the next day. Distance traveled, 30 miles.

April 14.—Holman and Syberty left station at 6 a. m., on skis; followed the road

to Madison Canyon; from there followed up the Gibbon River for about 5 miles, then returned to station. Saw 40 elk and tracks of 200, 2 minks and 3 muskrats in the Firehole, 2 coyotes, and 1 red fox. Distance traveled, 24 miles. Weather, fine. From all indications the elk are leaving Madison Canyon and coming into the Lower Basin.

April 15.—Stitham and Syberty left station on skis at 5.30 a. m.; followed the road to Canyon Creek and returned to station. Saw tracks of 1 bear. Weather, fine. Distance, 18 miles. Object, mail.

April 16.—Holman left station at 8 a. m., mounted; followed Nez Perce Creek to the mountain and then traveled south along Mary's Mountain; struck Spruce Creek about 5 miles from its mouth and followed it to the Nez Perce, then followed it to the station. Saw tracks of 75 elk. Saw 1 red fox and 2 coyotes. Weather, fine. Distance traveled, 22 miles. Object, scouting. A great many fresh beaver signs along the Nez Perce.

April 17.—Stitham and Syberty left station, mounted, at 1 p. m.; followed the road to Madison Canyon; there they met Sergeant Bernstein and 2 men from Riverside. They stopped there one hour and returned to station. Saw tracks of 20 elk. Distance traveled, 16 miles. Weather, snowing. Object, to take some packages for Sergeant Bernstein which had been left here.

April 18.—Holman and Syberty left station at 8 a. m.; followed the road to first bridge south of the Excelsior; there we left the road and patrolled through the Biscuit Basin. Arrived at the Upper Basin at 12 m.; stopped there one hour for lunch, and then followed the road down to the 5-mile post; left the road and followed up a small stream which flows from a hot basin. Patrolled all through the basin and returned to station. Saw tracks of 15 elk. Saw 2 coyotes. Distance traveled, about 35 miles. Weather, fine.

April 19.—Stitham and Ornes left station at 12 m. and followed the road to Riverside. Stitham stopped there one night and returned to station. Object of trip, to take Ornes to Riverside. He came out here on skis and was ordered to go to Riverside; as the snow is nearly all gone, he couldn't go on skis, and I sent him down mounted.

April 21.—Stitham and Syberty left station, mounted, at 10 a. m.; followed the road to Norris, and arrived there at 3 p. m. Returned to station the following morning. Saw tracks of 23 elk. Saw 1 bear and 3 cubs. Distance traveled, 38 miles. Weather, snowing. Object, mail.

April 23.—Holman left station at 9 a. m.; followed Sentinel Creek to the beaver dams and returned to station. Saw tracks of about 30 elk. Distance traveled, 8 miles. Weather, clear. Object, to look after the beaver.

April 24.—Holman left station at 8 a. m., mounted; followed the road to Riverside Station; there three hours and returned to station. Saw 2 coyotes, 3 muskrats, 1 mink, 1 badger, 2 grouse, tracks of 8 elk, and some fresh beaver signs along the Firehole. Met Scout Whittaker on the road to Riverside with pack train. Object, a trip to take some mail to Riverside and to get some fresh meat. Distance, 34 miles. Weather, fine.

April 25.—Holman left station, dismounted, at 8 a. m.; followed up Nez Perce Creek to Magpie; waded all through the beaver dams and returned to station. Saw 1 coyote, tracks of 30 elk, 3 sand-hill cranes. Distance, 10 miles. Weather, fine.

April 26.—Holman left station at 7 a. m., dismounted; traveled southwest to Twin Buttes and returned to station. Saw 39 elk, 2 coyotes, 4 sand-hill cranes, and 1 mink. Distance traveled, 10 miles. Weather, clear and high winds. Object of the trip, to try the skis between Twin Buttes and Summit Lake Cabin.

April 27.—Burdett and Stitham left station at 10 a. m. to go to the post, in compliance with verbal orders from the commanding officer.

April 28.—Syberty left station at 7 a. m., mounted, following the road to the post; remained there one day and returned to Norris on the 30th. Left Norris on the 1st of May and came back to station by the road. Distance traveled, 78 miles. Object, to get the horses shod.

May 3.—Holman left station, mounted; followed the old road half way to Riverside and returned to station. Saw 1 mink, 1 coyote, and tracks of 15 elk. Distance traveled, 16 miles. Weather, cloudy. Object, scouting.

May 4.—Holman left station at 9 a. m.; followed the road to the Upper Basin, mounted, and returned to station. Saw 81 elk and 1 coyote, and 4 sand-hill cranes. Distance traveled, 20 miles. Weather, cloudy. Object, scouting.

May 5.—Holman left station at 9 a. m., mounted; followed up Nez Perce Creek to the foot of Mary's Mountain and returned to station. Saw 1 coyote, 1 mink, 2 sand-hill cranes, and tracks of 75 elk. Distance traveled, 16 miles. Weather, snowing. Object, scouting.

May 6.—Holman left station at 9 a. m., crossed the Firehole River on footbridge west of the station, struck Sentinel Creek near its mouth, followed it to the head of the Queen's Laundry, and returned to station. Saw 1 bear, 1 mink, tracks of 15 elk.

Distance, 8 miles. Weather, clear. Object, scouting. Transportation, dismounted (on foot).

May 7.—Holman left station at 7.30 a. m., dismounted, to look for the horses which have strayed away. Struck their trail on the road leading to Norris; followed the trail up to Gibbon Canyon; there I met the lineman. He said he saw 2 horses in Elk Park; followed the road to Elk Park, looked all down the park, but did not find them; followed the road to Norris. Moore went out mounted, and found them near the station. I remained there until 3 p. m. and returned to the station. Distance traveled, about 45 miles. Weather, cloudy. Saw 1 mink in the Gibbon, tracks of 1 bear, and about 7 elk.

May 8.—Syberty left station, mounted, at 8 a. m.; followed the road to Norris and returned to station on the 9th. Distance traveled, 38 miles. Weather, clear. Object, mail.

May 10.—Holman left station at 7 a. m., followed the road to the post, remained there two days, left the post on the 14th, followed the road to Norris, stayed there one night, and came to the station on the 15th. Distance traveled, 78 miles.

May 18.—Holman left station at 9.30 a. m., mounted, for Riverside Station; arrived there at 1 p. m. Saw 15 elk, 7 badgers, 1 coyote, 2 grouse, and tracks of 1 bear. Weather, raining. Left on the morning of the 19th, followed the road to the station; saw numerous geese and 1 pheasant. Distance traveled, 32 miles. Syberty left station at 10 a. m., mounted; followed up the road to the Biscuit Basin, patrolled through the basin and returned to station. Saw 4 blacktail deer, 2 bear, 1 silver fox, and numerous geese. Distance traveled, 15 miles. Weather, snowing and blowing.

May 20.—Syberty patrolled road to Madison Canyon and return. Saw 18 antelope near Gibbon Bridge; tracks of 11 elk. Distance traveled, 16 miles. Weather, cloudy and snowing. Holman left station, mounted, at 10 a. m.; followed up Nez Perce Creek to the mouth of Magpie Creek, waded all through the beaver dams, found everything O. K., and returned to station. Saw 1 coyote, 2 minks, 2 grouse, and numerous geese. Distance traveled, 10 miles.

May 23.—Holman left station, mounted, at 10 a. m.; crossed the Firehole River at ford, followed up Sentinel Creek to the head of the Queen's Laundry, examined the beaver dams closely, and returned to station. Saw 75 elk, 1 coyote, numerous geese and ducks. Distance traveled, 8 miles. Weather, rainy. Object, scouting.

May 24.—Holman and Syberty left station at 7.30 a. m., mounted, following up the road to the Lone Star Geyser. Then we dismounted and tied our horses up and followed up the Firehole River to a point about 3 miles south of the Lone Star. Looked closely for beaver signs, but found no fresh ones. Returned to station at 5.30 p. m. Saw 1 bear, 1 coyote, tracks of 30 or 40 elk. Distance traveled, 34 miles. Weather, rainy. Object, scouting.

May 25.—Holman left station, mounted, at 1 p. m.; followed up Nez Perce Creek to the mouth of Magpie and returned to station. Saw tracks of 19 elk and of 1 bear. Distance traveled, 10 miles. Weather, cloudy. Object, scouting.

May 26.—Syberty left station at 8 a. m.; followed the road to Riverside, remained there one night and returned to the station the following day. Saw numerous geese. Distance, 32 miles. Weather, cloudy.

May 29.—Holman left, mounted, at 1 p. m.; traveled southeast to Twin Buttes and returned to station. Saw 27 elk, 1 coyote, 2 grouse, tracks of 1 bear. Weather, cloudy.

DEPARTMENT OF JUSTICE,
Washington, D. C., November 17, 1898.

The SECRETARY OF THE INTERIOR.

SIR: Section 5388 of the Revised Statutes, as amended by the act of June 4, 1888 (25 Stat., 166), provides as follows:

Every person who unlawfully cuts, or aids, or is employed in unlawfully cutting, or wantonly destroys, or procures to be wantonly destroyed, any timber standing upon the land of the United States which, in pursuance of law, may be reserved or purchased for military or other purposes, or upon any Indian reservation or lands belonging to or occupied by any tribe of Indians under authority of the United States, shall pay a fine of not more than five hundred dollars or be imprisoned not more than twelve months, or both, in the discretion of the court.

The act of June 4, 1897, entitled, "An act making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1896, and for other purposes," provides (28 Stat., 35):

The Secretary of the Interior shall make provisions for the protection against destruction by fire and depredations upon the public forests and forest reservations which may have been set aside or which may be hereafter set aside under the said act of March 3, 1891, and which may be continued; and he may make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction; and any violation of the provisions of this act or such rules and regulations shall be punished as is provided for in the act of June 4, 1888, amending section 5388 of the Revised Statutes of the United States.

Under the authority thus conferred the Secretary of the Interior, on June 30, 1897, promulgated certain rules and regulations for the purpose of regulating the occupancy and use of the forest reservations and to preserve the forests thereon from destruction, among which was the following:

13. The pasturing of live stock on the public lands in forest reservations will not be interfered with so long as it appears that injury is not being done to the forest growth and the rights of others are not thereby jeopardized. The pasturing of sheep is, however, prohibited in all forest reservations, except those in the States of Oregon and Washington, for the reason that sheep grazing has been found injurious to the forest cover, and therefore of serious consequence in regions where the rainfall is limited. The exception in favor of the States of Oregon and Washington is made because the continuous moisture and abundant rainfall of the Cascade and Pacific coast ranges make rapid renewal of herbage and undergrowth possible, etc.

In view of the foregoing, you request my opinion whether a criminal prosecution will lie to punish a person who grazes sheep in a forest reservation in violation of the regulation quoted.

I recognize the existence of the salutary rule that Congress can not delegate its legislative power so as to authorize an administrative officer, by the adoption of regulations, to create an offense and prescribe its punishment. But here the statute proclaims the punishment for an offense which, in general terms, is defined by law, the regulation dealing only with a matter of detail and administration necessary to carry into effect the object of the law. The protection of the public forests is intrusted to the Secretary of the Interior. Section 5388 makes it an offense, punishable by fine and imprisonment, for any person wantonly to destroy any timber on a public reservation. In furtherance of this policy, the act of June 4, 1897, directs the Secretary to make provision for the protection of the forests and authorizes him to regulate the use and occupancy of the forest reservations and to preserve the forests thereon from destruction, making for such purpose proper rules and regulations. Any violation of such rules and regulations is, by the statute, made an offense, punishable as provided in section 5388.

By this law the control of the occupancy and use of these reservations is handed over to the Secretary for the purpose of preserving the forests thereon, and any occupancy or use in violation of the rules and regulations adopted by him is made punishable criminally. It seems to me Congress has a right to do this. Suppose Congress had provided that the occupation or use of a forest reservation by any person, without permission of the Secretary, should be a misdemeanor? Would not this be a valid exercise of legislative power? The present statute does no more. The regulation is reasonable and necessary. It restrains no one in the enjoyment of any natural or legal right. To use the language of Mr. Chief Justice Fuller in In re Kollock (165 U. S., 526, 533):

> The regulation was in execution of, or supplementary to, but not in conflict with, the law itself, and was specifically authorized thereby in effectuation of the legislation which created the offense.

Your question, therefore, is answered in the affirmative.

Very respectfully,

JOHN K. RICHARDS, *Solicitor-General.*

Approved.

JOHN W. GRIGGS, *Attorney-General.*

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 40.

DIVISION OF MINES AND MINING, UNITED STATES GEOLOGICAL SURVEY.

DECEMBER 21, 1898.—Referred to the Committee on Mines and Mining and ordered to be printed.

Mr. STEWART presented the following

LETTER FROM THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY, TRANSMITTING A REPORT ON JOINT RESOLUTION (S. R. 205) TO PROVIDE FOR A DIVISION OF MINES AND MINING IN THE UNITED STATES GEOLOGICAL SURVEY.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
Washington, D. C., December 21, 1898.

SIR: I have the honor to transmit herewith a letter to the chairman of the Senate Committee on Mines and Mining and a report on joint resolution (S. R. 205) to provide for a division of mines and mining in the United States Geological Survey.

I believe that the mining interests should have a clearly defined representation in the organization of the Government, and that either this proposed division or a bureau of mines should be established. I think that such a division or bureau would be of decided and practical value to the mining interests of the country.

I am, with respect, your obedient servant,

CHAS. D. WALCOTT, *Director.*

The SECRETARY OF THE INTERIOR.

Approved and forwarded to chairman Senate Committee on Mines and Mining.

C. N. BLISS, *Secretary.*

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
Washington, D. C., December 21, 1898.

SIR: In accordance with the indorsement on the copy of the joint resolution to provide for a division of mines and mining in the United States Geological Survey (S. R. 205), I have the honor to submit the accompanying report, which is assembled under the following headings:

1. Introduction.
2. Foreign bureaus of mines and mining.
3. Free mining.
4. Statistics.

5. Economic and mining geology.
6. Special economic investigations.
7. Museum of practical geology.

The only change that I have to suggest in the resolution is that there be added after the word "investigations," in line 10, page 2, the words "and surveys," so as to read, "and making investigations and surveys in relation to mines and mining generally."

The general law of the Geological Survey provides for "the classification of the public lands, and examination of the geological structure, mineral resources, and products of the national domain." It does not appear to provide specifically for the representation of the mining interests of the United States and for the work that should be done to properly represent them. In view of this, and of the necessity of having some bureau of the Government give attention to the great mining interests of the country, I think it desirable that the proposed division of mines and mining be established in the Geological Survey, or, if that is not best, that a division or an independent bureau be established in some department of the Government.

The appropriation mentioned in the resolution ($150,000) would be sufficient for the statistical work and for investigations which have been waiting many years to be undertaken owing to lack of funds and proper authority. These would include the problems connected with coal, iron, gas, and oil of the Appalachian region from New York to Alabama; the nonmetallic mineral products, such as clays, borax, soda, etc., of the interior regions, and the great mineral product of the mining States of the North and Northwest.

The total metallic mineral product for the calendar year 1897, which includes pig iron, silver, gold, copper, lead, zinc, aluminum, antimony, nickel, and platinum, considered as commercial commodities, was $269,006,330; and the nonmetallic product, such as coal, building stone, petroleum, clays, quarry products, etc., valued at the point of production, was $329,113,845, making a total mineral product commercially valued at $598,120,175.

If the usual census of the mining industry is made for 1900, it will cost about $200,000. This need not be expended if the proposed division is established in the Geological Survey.

Yours, with respect,

CHAS. D. WALCOTT, *Director.*

Hon. WM. M. STEWART,
Chairman Committee on Mines and Mining,
United States Senate.

REPORT ON A PROPOSED DIVISION OF MINES AND MINING IN THE UNITED STATES GEOLOGICAL SURVEY.

1. INTRODUCTION.

There has been a sentiment growing among the mineral producers throughout the United States that the Government has not given as much attention to mining as the importance of that industry demands; that inasmuch as there is a Department of Agriculture, there should also be a department of mines, or at least a bureau in which mines and mining should form a part of the title. There does not seem to be any well defined idea of what the scope or duty of such a bureau should be or what relations it should sustain to existing bureaus of the Govern-

ment dealing more or less indirectly with statistics and matters relating to mines and mining. It appears that many of the advocates of the establishment of a department of mines and mining have lost sight of the fact that an existing organization, the Geological Survey, includes among its duties many that could be done by such a department; that by the establishment of a division of mines and mining within the Geological Survey the mining interests of the country would have a clearly defined representation in the organization of the Government; that if properly provided with means for the collection of statistics and investigation of all matters pertaining to mines and mining, and publication of the statistics and information thus gathered, the interests of the mining industry would be properly cared for.

2. FOREIGN BUREAUS OF MINES AND MINING.

Practically all governments except the United States have established a system of inspection and regulation of mines throughout their domain, and many have, through their geologic and other surveys, prepared topographic and geologic maps that have been of material aid in the development of mining interests.

The duties of the officer corresponding to a suggested commissioner of mines vary materially in the different countries. At the present time the functions discharged by the inspector of mines in Great Britain are in this country performed by the General Land Office, the Department of Labor, the Geological Survey, special inspectors of mines who report to the Secretary of the Interior, and the Director of the Mint, who assembles the statistics relating to gold and silver.

In Great Britain there is but little statutory legislation on the whole subject of mining beyond that which relates to the regulation and inspection of mines. In the absence of such general legislation the legal questions governing the ownership and working of mines and minerals have been determined by decisions of the courts, based on the general principles of the common law and on local customs. The regulation and inspection of mines is now in charge of the home office, to which the inspector of mines reports in relation to the mines and upon the mineral statistics.

Great Britain has been very liberal in making topographic and geologic surveys, for general information and for assistance in the development of the mining resources of the United Kingdom. In 1791 a general triangulation of the kingdom was begun, which was completed in 1853. With the beginning of triangulation topographic and cadastral work was inaugurated, and the cadastral work still continues. The work was originally in charge of the war department, under the board of ordnance. In 1870 the ordnance survey was transferred, without change of personnel, from the war department to the commissioner of works. The geological survey of England was organized in 1832 and that of Ireland in 1845. In 1854 the geological survey of Scotland was made a distinct branch, and in 1877 the title of Great Britain was dropped, and the geological survey of the United Kingdom then included the surveys of England and Wales, Scotland, and Ireland. It was at first a bureau of the ordnance survey, but is now a branch of the department of science and art. In 1859 a mining record office was established.

In France the head of the mining administration is the minister of public works, and in each department the prefect is the head of the service, under the authority of the minister of public works. Then

there follow (1) the council general of mines, made up of the inspectors-general of the first and second class; (2) engineers in chief, divided into three classes; (3) ordinary engineers, divided into three classes, and (4) "gardes-mines," divided into four classes.

The French system is one of almost absolute State control in regard to concessions for mining and inspection and regulations of mines. It is in strong contrast with the policy of Great Britain.

France has prepared an elaborate topographic map on the scale of 1:50000, or less than 1 mile to the inch. Its first mineral survey was begun in 1789. In 1822 a plan was adopted for the preparation of a general geologic map. The map, with explanatory text, was published in 1841. It was upon a small scale, and even before it was published a new survey was begun under the various departments. The existing survey was instituted in 1868, and has for its primary object the preparation of a detailed geologic map of France. It is under the minister of public works.

In Germany the mining administration is under the charge of a minister of public works, the provisions of the mining law being intrusted in the first instance to an official in each mining district, and in the next to a council, of which there are five in Prussia, and in this State the mining authority alone (and not as in other countries, in conjunction with civil authority) has entire jurisdiction of matters relating to mining, except with regard to surface damage.

The geological surveys in the Empire of Germany are not wholly under the direction of the Imperial Government. Several of the States have geological surveys of their own, such as Prussia, Saxony, Bavaria, etc. At first geological investigations were carried on under the royal superintendence of mines, constituting a division of the department under the minister of commerce, industry, and public works. In 1873 the survey was reorganized, being modeled chiefly after the surveys of England and Austria. Its official relations are with the department of commerce, industry, and public works. The topographic maps which it uses are prepared by another department of the Government.

In New South Wales all matters relating to mining on Crown lands are vested in a minister of mines, who appoints a set of officials to carry out the provisions of the mining act. There is also a mining board, which makes regulations subject to the approval of the governor.

Nearly all countries have some form of mining establishment and geological survey, but the four mentioned illustrate the prevailing types.*

From a review of the laws and the plans of organization of the institutions controlling the mining interests of the various countries, excepting the United States, it is evident that the bureaus, etc., were primarily established for the purpose of Government inspection, regulation, and supervision of mines, on account of the Government having a direct pecuniary interest either in the output of precious metals or, in the case of many, in all minerals mined.

3. FREE MINING.

The United States Government has never asserted the right of sovereignty in or over its precious metals, and rarely over any mineral

* The mining laws of Europe are well summarized up to 1889 in "Annali di Agricoltura, 1889. Leggi minerarie del l'Europa." Published by the Ministry of Agriculture, Industry, and Commerce, Rome, Italy. There is also a valuable guide to the mining laws of the world by Oswald Walmesley, published by Eyre & Spottiswoode, London, 1894.

product. In 1807 a system of leasing the lead and copper mines was adopted for the purpose of securing revenue. After a trial of nearly forty years the system was pronounced a failure, and in 1846 the mines were offered for sale. When the gold mines of California were discovered, and the great mineral wealth of the Pacific Coast was brought to the attention of Congress, several revenue bills were introduced at different times and earnestly debated, but no action was taken that interfered with free mining.

From long association with mining men engaged in active mining operations in all sections of the country, I doubt that any scheme providing for Government interference in mining operations would be acceptable to the mining industry of the United States. At the present time the State laws, although in many cases inadequate, appear to provide protection for the mining employees. This question, however, is one that could be properly investigated by the proposed Division of Mines and Mining. The same also is true of the Federal laws relating to mining in the portions of the public domain not under State governments.

4. STATISTICS.

At the present time the statistics of mineral production are gathered and compiled by the Division of Mineral Resources of the Geological Survey, with the exception of those of gold and silver, which are under the charge of the Director of the Mint. With a very little additional cost the gathering of statistics of minerals other than those of gold and silver can be perfected so as not to require any considerable additional expense or increase of force. For the purpose of gathering more satisfactory statistics of gold and silver they should include:

1. A statement of the total number of ounces of gold and of silver obtained from the mines of the United States.
2. A statement of the foreign gold and silver refined at domestic works.
3. A statement (as accurate as the total statement) of the amounts furnished by each district.
4. A simple division of the gold into classes according to its source, viz, placer gold, and vein gold, and subdivision of the vein gold into gold from "smelting" ores, and gold from "lean" or free-milling ores.
5. A statement of the character of the predominant ores from each mining district, such as placer gold, free gold from quartz veins, refractory sulphurets, silver-lead ores, tellurides, etc., and a brief statement of such conditions of occurrence as markedly affect the methods of mining and limit the grade of ore which can be mined at a profit.
6. A statement of the methods of treatment employed in each district and the measure of success attending them.
7. Many other interesting subjects of inquiry have been suggested by various authorities, which do not seem proper for an annual exclusively statistical report, but which could properly be included in a report covering the mining industry in its entirety.

Among them is the suggestion to include a technical inquiry into the various processes of extraction of gold and silver, such as the cyanide process, chlorination, the corresponding bromine process, and even a more exact study of amalgamating methods. An entirely different line of work would be still more valuable, viz, to determine the number of persons employed in mining operations, the wages paid, and other items of expense leading to a statement of the cost of producing gold and silver; but it seems proper to exclude all these subjects, leaving

the technical themes for the papers of associations of mining engineers, and the consideration of cost to a decennial inquiry.

No division of the gold product into placer gold and vein gold has been attempted for years, yet the continued demand for this information indicates the advisability of publishing it. Placer gold has in history been the source from which sensationally large supplies of gold have come at short notice and with marked effect upon the gold market, while vein gold has been the product of slow development, with the investment of much capital and the establishment of contributory industries.

The intelligent investment of capital in precious metal mines, on business rules and without especial speculative excitement, depends essentially upon information impartially collected and widely distributed as to the characteristics of the ores which furnish most gold and silver in each district. The adaptability of these ores to various methods of treatment must be simply but clearly set forth. This can best be done by a few general statements concerning each camp, showing what processes have contributed most gold for each kind of ore.

The information demanded from the statistics of gold and silver points us to the mines themselves as the necessary source. It will constantly become more difficult to collect the statistics by the present method alone. To collect them from the mines will be difficult at first, but will steadily grow easier as the mining interests organize and consolidate and the proportion furnished by wandering prospectors and other small operators grows smaller.

It appears to be desirable for the Treasury Department that the statistics of gold and silver, included under Nos. 1 and 2 of the preceding plan for collecting them, should be collected by the Director of the Mint from the mints, refineries, etc., as at present, but I think that the Geological Survey should collect the statistics, as planned under Nos. 3, 4, and 5, and cooperate with the Director of the Mint in perfecting the statistics collected under No. 1. This would give a check on the statistics collected by the Director of the Mint, and in turn check, through the mint returns, the statistics gathered by the Geological Survey.

Plan for collecting statistics.—The collection of the statistics would be based principally on the method of the eleventh census of mines.

A list of the gold and silver mines would be obtained by the methods now well developed in the statistical division of the Survey. Using all the facilities which exist there, this work would be rapid and as exhaustive as possible.

To each of the mine operators the following card of inquiry would be mailed:

Name and address of operator, ———.
Location of mine, ———.
Number of ounces, fine, of gold produced in 189—, ———.
Value received for gold produced in 189—, ———.
Number of ounces, fine, of silver produced in 189—, ———.
Value for silver produced in 189—, ———.
[Signature of producer] ——— ———.

Sixty per cent of the product should be obtained promptly by these cards without waiting for the considerable percentage which would come slowly. A corps of experts would clear up the various districts by personal visits. In these visits they would—

1. Revise the list of mines.
2. Collect the product of mines which had not been reported.
3. Check doubtful returns.

4. Collect the information as to the sources of gold and silver, and all available information as to the conditions of occurrence and methods of reduction.

In suggesting this plan, the great difficulties have been carefully considered. For example, it frequently occurs that mines are relocated, first by one party and then by another, and thus have several names, and each one of these names finds its way to the list. Again, many of the organizations have no legal existence whatever. This causes "joint companies" known by so many names as to be duplicated and triplicated in the reports. In one county in California a recent statement gave to the same mine, which appeared under two names, a product of $75,000 under one name and $18,000 under the other. Again, under the matter of hydraulic mines the usual answer to requests for information is, "Closed by injunction of United States courts," although the product may actually have been considerable. The greatest source of error is undoubtedly exaggeration, an incentive for which comes from owners wishing to sell mines or extensions of them, and the hope that the individual statement may be published. The following quotation will indicate a few of the difficulties met with at the time of the Eleventh Census.

Hence all the estimates from small mines and from Chinese mines contained in the Mint reports are absent in ours. Many times in the Mint reports these were duplicated. Moreover, the Mint reporters themselves found that they were imposed upon by people anxious to give their camps good names in official reports. We got all the Chinese we could and adopted good measures to obtain their figures. We had letters written in Chinese by the consul telling them to give us the proper reports. The Mint took no such precaution, as they could only send circulars, and to those no Chinese responded.

The totals thus obtained would be verified and revised by the returns of common carriers, the mills where the ores are reduced, the smelters, and the returns of the Mint officials.

In brief, no present source of information would be neglected, but the information from mines would gradually be made complete and accurate.

At a hearing before the Senate Committee on Mines and Mining on January 25, 1897, there appeared before the committee the Director of the Mint, Mr. R. E. Preston; the Commissioner of Labor, Mr. Carroll D. Wright; and the Director of the Geological Survey. At the request of the committee the Commissioner of Labor submitted his opinion of the desirability of having the statistics on mines and mining collected by the Geological Survey. This letter was published as a part of Senate Report No. 1338, Fifty-fourth Congress, second session, to accompany Senate resolution No. 362. As it expressed very concisely the opinion of the Commissioner of Labor, it is here inserted:

DEPARTMENT OF LABOR,
Washington, D. C., January 25, 1897.

DEAR SIR: In obedience to the request of your committee this morning, I have the honor to inform you that the cost of the division of mines and mining in the Eleventh Census was $196,236.16. This sum was exclusive of the printing and binding of the very valuable Report on Mines and Mining.

Referring to the proposition made before your committee this morning that the appropriation for the Geological Survey for the collection of information concerning mines and mining be increased, I would say that, in my opinion, the amount asked would not only accomplish the purposes for which the appropriation is sought, but it would make it unnecessary for the Twelfth Census to take up the question of mines and mining; and thus, by making the appropriation annually for the Geological Survey, there would be a saving in the Twelfth Census of probably $200,000.

In a report on a plan for a permanent census service, which I had the honor to make to Congress on the 7th of December last, I called attention to the advisability of

eliminating certain reports from the decennial census work, and the report on mines and mining was one of them.

Dr. David T. Day, of the Geological Survey, who had charge of the division of mines and mining in the last census, did great service for the Census Office and for the public; but I believe that, could the Geological Survey have a sufficient amount of money to expend annually, the same work could be made far more valuable to those interested in the various phases of mining. In addition to the technical work which the Director of the Survey would be enabled to carry out, he would also be in a position to collect statistics of wages and employment and other matters pertaining to the individual that would add vastly not only to the interest but to the value of the annual reports of the Survey upon mines and mining.

I am, very respectfully,

CARROLL D. WRIGHT, *Commissioner.*

Hon. WILLIAM M. STEWART,
Chairman Committee on Mines and Mining, United States Senate.

5. ECONOMIC AND MINING GEOLOGY.

As a matter of interest in connection with the establishment of a division of mines and mining of the Geological Survey, the following comments on economic and mining geology of the Geological Survey are inserted for the information of those interested:

It is well known that in creating the United States Geological Survey Congress and the people whom it represents expected that its energies would be largely devoted to the development of the mineral resources of the country. How this method should be accomplished was left to the Director and his principal assistants, who, by scientific training and long practical experience, were the best qualified to judge what could and what could not be done by such a corps of specialists as the Survey must necessarily consist of—men whose whole life is devoted to the abstract side of geology and whom neither the regulations of the Survey as defined by law nor the exigencies of their official duties would permit to participate in the practical or commercial development of these resources.

It was evident that these specialists could not take the place of either the prospector or the mining engineer, as a somewhat superficial view of the subject has led some to think they might. They should, of course, understand the principles that underlie the work of either of these classes of men, but they can not be expected to possess that expertness of instinctive second sense in each of these professions which can be acquired only by lifelong practice.

The Survey should furnish an accurate basis upon which the work of each of these experts, so indispensable in the development of the mineral resources of the country, may be founded. The Survey stands, so to speak, between them and nature. It should endeavor to tell the prospector where he may and where he may not prospect to advantage for this or that valuable mineral, but it can not be expected to actually find the mineral for him. It should aim to discover for the mining engineer first of all the general laws which govern the occurrence of the different useful minerals, and to show the special applications of these laws in the particular mining regions that come under survey; but it can not undertake to direct the workings of individual mines or quarries, nor guarantee that every mining engineer will make a correct application of the laws that have been discovered.

In the early years of the Survey there were practically no topographic maps upon which the surface distribution of different classes of rock formations could be indicated (areal geology), and which should thus serve as a basis for the work of the prospector. Hence it was only the study of the already developed ore deposits, for the purpose

of determining the laws under which they were formed, that could be immediately undertaken. A number of monographs or exhaustive studies of important mining districts were made, during which several new laws or generalizations concerning the formation of ore deposits in general were formulated. Incidentally, the accurate geological descriptions contained in these monographs proved to be of great practical value to those engaged in mining in these particular districts. By these studies, conducted for the most part at great depths below the surface, those engaged in them acquired a practical familiarity with many geological phenomena connected with ore deposits that could not be seen upon the surface, and were thereby specially fitted to judge of the ore-bearing capabilities of rock formations in general. This constitutes a special training that can not be acquired in the schools, but can only be imparted to the young geologist by actual experience in mining or economic work under the guidance and instruction of older geologists who have already gained it by long-continued special work.

During the last few years the topographic maps of very large areas have been completed, constituting several hundred of the sheets that will form the basis of the geologic atlas of the United States. Many of these sheets have already been colored geologically; that is, the areal geology has been completed, and they have been published as geologic folios. In a few cases the areas have also been studied economically; that is, the manner of occurrence of the known ore deposits has been observed, and deductions drawn therefrom are given in the folio, which will show the prospector where similar favorable conditions exist and where, in consequence, are the most promising localities to search for other ore deposits. The latter class of work is more difficult and more expensive, for many reasons, than other geological work.

The increase in effectiveness of this work must, however, proceed slowly. Even with unlimited amounts of money immediately available the economic work of the survey could not at once be spread over the whole country, as it should be, for the reason that it would take time to train the additional number of specially prepared geologists required. But there is no doubt that by a natural enlargement of the present plan of work the demands of the mining community for Government aid in the development of their particular branch of industry can readily be largely met.

It has been generally understood that information acquired by the Government is open to all and is not for the benefit of any one individual or corporation. Language to this effect was inserted in the statute organizing the Geological Survey, in 1879. This, then, draws the line between public and private interests. There is more or less extended desire that assays and analyses and examinations of prospects and mines should be undertaken by the General Government; but it would seem to be clear that expert work and assaying should be left to individuals and corporations, so far as the General Government is concerned. State mining bureaus or schools of mines can properly assist in the study of details and lend much aid to local development, but the General Government should deal only with interstate and such other problems as the State can not well undertake.

6. SPECIAL ECONOMIC INVESTIGATIONS.

There are a number of special investigations that could be profitably made by the proposed division of mines and mining which do not properly come within the scope of any State organization, as they affect

interests that are distributed through adjoining States, and frequently through many States. As an example of this it is desirable to make a uniform and comprehensive study of coal and its resultant product—coke—petroleum and asphalts, building stones, and clays.

The coals and cokes of the United States have so far been studied mainly on the empirical side, each by itself, or at best in small series and with reference to immediate purposes. Most of the analyses have been partial only, and there have been very few complete and ultimate analyses, particularly when we consider the extent of our resources. Then, coupled with the chemical investigation, should be a thorough study of the calorific value of the various coals, not only as shown by the analyses, but through the medium of thorough and systematic practical tests. There is much need for information of this kind, not only by those interested in the coal-mining industry itself, but for the transportation and countless manufacturing industries dependent upon coal for fuel.

The coke-making industry, closely allied to that of coal mining, could also be much benefited by a study of the best methods of coke making. The prevalent method heretofore in use in this country has been an exceedingly wasteful one in that valuable by products generated in the coking process have been lost, and it is only within very recent years that the problem of saving and utilizing these by-products has been seriously considered. In Germany important industries have been established, based upon the utilization of the by-products—gas, tar, ammonia, etc.—produced in the coke-making process; and a systematic investigation by the Government of the possibilities of the different coals in this country, in regard to their contents of these substances, as well as to their coke-making qualities, would be exceedingly valuable.

With the present laboratory, force, and resources, the Geological Survey can do very little toward increasing our knowledge of the problems here suggested, but with increased facilities the Survey might well take up a systematic investigation, the results of which would well repay the expense involved.

Of the other great fields of economic chemical research which may be mentioned as necessary, the one regarding our petroleum and asphalts, closely linked with the investigation of coals is pertinent. A study of our clays, with reference to pottery, terra cotta, and brick-making, also appears an important field, and one which has been almost entirely neglected. The establishment of clay-working industries is all the more important from the fact that it almost invariably indicates the formation of a stable community, which is not the case with many of the mining industries.

The total value of the products mentioned above, in 1897, was as follows:

Coal	$198,869,178
Coke, including the value of the coal used	19,234,319
Petroleum and asphalts	41,594,243
Manufactured clay products	60,911,641

7. MUSEUM OF PRACTICAL GEOLOGY.

The attention of the Director of the Geological Survey has frequently been called to the desirability of having a museum of practical geology, to be kept up to date, so connected with the Geological Survey that the officers of the Survey would have ready access to it, and of constant service also in answering questions put by scientific and practical men who might visit the museum for the purpose of obtaining information

in relation to any mineral product that they might be interested in, either as producer or consumer.

The Geological Survey has some 40,000 correspondents who furnish information in relation to the mineral resources of the United States. There is little doubt that a plan for a museum of practical geology would meet with the hearty cooperation of the mineral producers of the country, and that a collection of a representative display of economic minerals and quarry products could be obtained at a cost very little in excess of the actual necessary correspondence and freight charges on specimens too heavy for transportation through the mail. In a majority of cases, producers would be willing to incur all expenses necessary to have their products exhibited in such a museum for the simple privilege of having their names as donors attached.

Such a collection would be quite useful in the work of the Survey and would possess great educational value for visitors. It is desirable, in view of the large outlay which is being made by the Government for geological surveys and the collection of mineral statistics, that any person interested in any mineral product should be able to secure statistical information and see at the seat of Government specimens of all products pertaining to the special line in which he is interested. For example, a person wishing to obtain information in relation to marble, either as producer or consumer, should be able to personally examine specimens of marble from the principal quarries of the United States, and by inquiry to learn all that is known of any particular marble in which he may be interested.

In addition to the series of rocks and fossils illustrating stratigraphy in succession of the sedimentary rocks, and the systematic collection of minerals and ores, an exhibit showing how geologic work benefits the daily life of the people should be developed. An illustration of this would be a representation of the artesian-water supply of the semi-arid region, showing the stratigraphy and structure of the sedimentary rocks, and how hydraulic and geologic investigations clearly indicate the regions in which artesian water development may be carried on successfully. Mining and areal geology should also be illustrated in such a manner as to place before the student and intelligent observer the import and value of such work.

There was recently received at the office of the Survey, through the Secretary of the Treasury, a request from the Supervising Architect for information in relation to a granite that it is proposed to use in the construction of public buildings. It seems desirable that the Supervising Architect should be furnished with information as to the qualities of the granite so far as they affect it as a building stone. All such information can be furnished by the Geological Survey, with the exception of the crushing and tension tests, which, for lack of proper apparatus, must be made elsewhere. It is my opinion that every variety of granite, sandstone, limestone, and slate, and every other stone entering into the construction of a public building, should be examined and its qualities determined before a contract is entered into for its use.

In the case of well-known building stones that have already been tested by long use this is perhaps not essential, but even with this class of materials I believe that in the majority of cases it would be better in the long run to have an examination and report made, and in those instances where the material submitted is from new or relatively unknown quarries that an examination should be made at the quarries of the stone in situ, at the expense of the owner or contractor, provided it is proposed to use the stone in a Government building. If coopera-

tion could be secured with the War Department it will be practicable to have all necessary crushing and tension tests made at the Watertown Arsenal, where there is already machinery established for the purpose.

For the proper exhibition of the collections of practical geology, there should be provided, in connection with the National Museum, according to a rough estimate, at least 30,000 square feet of floor space. The collection would include, in addition to what has just been discussed, the collection of rocks and minerals and synoptic series of the fossils now included in the National Museum collections.

There exists at the present time at the National Museum a geological collection of great value, but it is not as complete as it is desirable to have it, and it can not be kept up to date with the present force and space. There should be provided within a few years a building that could accommodate all the geological collections of the Government. It is not proposed that these collections should be removed from the custody of the National Museum, but that they should be properly installed and cared for independently of the general collections of the Museum.

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 41.

THE NEW PANAMA CANAL.

DECEMBER 21, 1898.—Ordered to be printed.

Mr. PETTIGREW presented the following

PAPER, BY HENRY L. ABBOTT, ENTITLED "THE NEW PANAMA CANAL."

THE NEW PANAMA CANAL.

The delays and risks experienced in bringing the *Oregon* eastward from the Pacific coast at the outbreak of the war with Spain have drawn the attention of the whole country to the importance of an early construction of a ship canal across the isthmus now obstructing free communication between our Atlantic and Pacific coasts. The route by Cape Horn is entirely too long to meet present demands, either commercial or military.

But, while *a* canal is so urgently demanded, it is equally true that it should be, in respect to facilities of transit, security of operation, and cost and time of construction, *the best canal possible.* The work will be a gigantic engineering feat, and no mistake in selecting the route should be made at the outset.

Unfortunately, the American public has been led to believe, by the collapse of the old sea-level project at Panama, that there is only one really practicable route for a canal, viz, that by Nicaragua. The elaborate investigations which have been in progress at Panama during the past eight years are little known or appreciated in America, having been conducted quietly (especially during the last four years) by the new company, with a view to determine the best and most economical solution of the problem before making public the information obtained.

The writer, being a member of the Comité Technique invited to assist the new Panama Canal Company in directing its investigations and forming its conclusions, has had exceptional advantages for understanding the subject in its present aspects. The comité is international in composition, and includes French, English, German, Russian, and American engineers—among them the chief engineers of the Manchester and Kiel maritime canals. It may be added that, in this respect, it reflects the view of the company that the work should be broadly international in character, a benefit to the whole world, and not simply a French construction. Last spring the writer visited the Isthmus of Panama with other engineers, and personally examined the route in detail. He has had for many months free access to the elaborate records of surveys, borings, experimental excavations, river gaugings, and researches of every kind conducted by the company, and is therefore qualified to present the subject in its true aspects, which may be found to differ widely from the popular impressions now existing in America.

When the idea of constructing a sea-level canal at Panama was definitely abandoned, there remained three important difficulties to consider: (1) The regulation of the water supply, and control of the floods of the Chagres River; (2) the serious caving which had occurred at the Culebra, and (3) the ill effects of the climate upon the health of the employees. The present conclusions as to each will be given in turn.

(1) The studies of the region of the Chagres have been most elaborate, including water levels, automatically recorded since 1883; frequent measurements of the discharge at crucial points; the collection and discussion of data respecting all the historic floods (five in number, of which one was carefully measured); rain records at points well distributed along the route of the canal, aggregating fifteen years on the Atlantic coast, thirteen years on the Pacific coast, and thirty-two years in the interior; and, finally, a collation of all this material, and the elaboration of projects perfectly providing for controlling the floods, for the supply of the summit level with water during the dry season (January, February, March, and April), and for ample hydraulic power at the dams, transmitted by electricity, for operating the locks and lighting the canal at night. It may safely be affirmed that the Chagres River is no longer an element of danger, but is rather a useful friend, whose assistance will be of great value to the canal in its operation.

(2) The question of caving in the deep central cut has been studied in the most thorough manner, involving not only many borings and pits to determine the material to be encountered, but also a tunnel excavated throughout the troublesome region along the axis of the canal, having a projected width at bottom of 32¾ feet, with slopes of about 45°, and a projected elevation above sea level varying from 128 feet to 157½ feet. This work, together with a tunnel 689 feet long and 9¾ feet wide, pierced, at an elevation of 134½ feet above sea level, at the spot which had given the most trouble on the whole route, combined with the evidence afforded by the borings and pits at greater depth, leads to the conviction that at Culebra, where the deepest cutting is required, the excavation has already passed through the strata subject to caving, and that the remainder traverses an indurated argillaceous schist changing to compact rock, where no fears of yielding to pressure need be entertained. At Emperador, where the cutting required for the canal is much less, the indications are similar, except that the material at present reached is less resisting; but with proper precautions in the way of drainage, which were wholly neglected by the contractors of the old company, little or no difficulty from serious caving need be apprehended. This work of experimental excavation has been continued for more than three years, involving the removal of about 3,924,000 cubic yards. It was projected, partly, to determine the proper inclination for the side slopes, and partly to estimate the unit cost. The results are highly satisfactory; and the old bugbear of a sliding mountain divide has been proved to be imaginary.

(3) The health of the personnel formerly caused trouble, coolies and other races not well suited to hard labor under a tropical sun being employed. With negroes from the British Antilles little difficulty is now experienced. This matter was carefully investigated during the inspection last spring, American engineers and employees on the canal and the Panama Railroad being questioned, the fine hospital near Panama—where the company provides for its sick—being visited, and the views of the medical officers and of the Sisters of Charity, acting as nurses, being obtained. All agreed that the dangers resulting from the climate have been much exaggerated. The surgeon in charge of the hos-

pital. Dr. Lacroisade, who has resided on the Isthmus since 1887, after presenting full statistics covering the sick reports for the past year of a force of about 3,800 agents and laborers under employment, said:

Among the diseases attributable to the climate the most numerous are simple marsh fevers, which have not occasioned a single death. Two diseases only belonging to the epidemic type have appeared—the beriberi, of which there is no longer any question (it was imported with negro laborers brought from Africa as an experiment, and disappeared when they were sent back), and yellow fever. The latter, after having been absent from the Isthmus for at least six years, was imported in 1897, and continued about six months—from March to August—when it again disappeared after very light ravages (only six deaths). Thus it can not be considered that this pest is really epidemic on the Isthmus. From the other infectious epidemics, such as variola, typhoid fever, diphtheria, etc., the Isthmus appears to be almost entirely exempt. From the foregoing we may conclude that life on the Isthmus scarcely incurs more dangers than elsewhere, even for Europeans, who, after the blacks of the British Antilles, appear to resist the climate best. Residence here would, then, offer nothing alarming were it not for a constant feeling of fatigue and uneasiness due to a temperature always high and an atmosphere saturated with moisture.

There appears, therefore, to be no danger of serious mortality in the construction of the canal, if due care be taken to benefit by past experience in selecting the laborers.

The three old specters barring the route being thus laid at rest, it remains to consider the present project for the canal. This has been most carefully elaborated. No less than sixteen projects (not including the older proposals) have been worked out in detail, including estimates of cost and of the time needed for construction.

The entire length of the canal is 46 miles, of which about 15 miles on the Atlantic side and 7½ miles on the Pacific side, or about one-half of the whole distance, will be at sea level. Of this distance 18 miles, or about two-fifths of the entire route, is to-day essentially completed, so that at a moderate outlay for dredging it will be made at once serviceable. We have, therefore, only to consider the 23½ miles between Bohio, on the Atlantic side, and Miraflores, on that of the Pacific. Two excellent harbors, which will demand no outlay for protection, are available; and the Panama Railroad skirts the canal throughout its entire route to be availed of in construction. Ample quarters, in fair condition, for the increased force of laborers are already prepared at many sites. These advantages are immense where time is of so much importance.

There is another advantage, in my judgment scarcely less valuable. By careful technical studies the company has succeeded in provisionally adjusting the project so that a choice between the best three different summit-levels may be reserved, to be decided by actual experience in conducting the work upon a grand scale. These projects are designated as "Level 96¾ feet," "Level 69 feet," and "Level 32¾ feet," the figures indicating the elevation in feet of the bottom of the canal at its highest level above mean tide, which is found at practically the same absolute level in both oceans, although the tidal range at Colon is only a few inches, while at Naos it may at times reach 20 feet. A comparison of the estimated cost of construction, properly so called, has established that, as between larger excavation, on the one hand, and more locks and higher dams, etc., on the other, there will be nearly a balance of expenditure. The cost of either of the plans is estimated at about $100,000,000. It is not the same, however, when the element of time is considered. This time will vary with the amount of excavation called for in the deep cutting at Culebra and Emperador, which will largely determine the duration of the work. The deeper this cut, the longer will be the time required to complete the canal, and, consequently, the

greater will be the outlay in general expenses of administration, interest on the funds to be raised, loss of revenue, etc. These are important elements of expense sometimes neglected in estimates.

Basing the rate of probable excavation chiefly upon the experience acquired by the old company in operating on a large scale, checked by that of the new company in operating under many disadvantages upon a small scale, it has been computed that there will be required to complete the project of level 96¾ feet about eight years, and longer proportionally for the other projects. But it must not be forgotten that the old company has been criticised, perhaps justly, for the mode adopted by its contractors in prosecuting the work—rapidity of execution not having been made an object to be specially sought. Also, that great improvements have been introduced during the past ten years in machines and methods. It is therefore not unreasonable to expect that with these improvements and with better stipulations in the contracts these estimates of time, at least for the higher levels, may be notably reduced, and excessive incidental expenses for interest, etc., be thus avoided. To be convinced of this, it is sufficient to consider the rapidity attained in excavating the ship canals of Manchester and Kiel, and especially the drainage channel at Chicago, where such great advances were made.

It is a great merit so to have adjusted the projects as to be able to pass readily from one to the other, if experience in the progress of the work should show this to be desirable. But how is this advantage to be secured? Simply by so adjusting the different levels as to permit the change to be made by omitting upper locks—thus calling for ten, or eight, or six locks, in the three projects, respectively.

All three projects require a dam at Bohio, transforming the Chagres River into a vast lake, of which the boundaries have been accurately determined. It will extend a distance of 13 miles to Obispo, where the canal leaves the river, and will cover an area of about 21¼ square miles. Its lowest level is fixed at 52½ feet, its normal level at 55¾ feet, and its highest level at 65½ feet above mean tide. It thus provides a reservoir to retain 196,000,000 cubic yards of flood discharge, which, with 130,000,000 more held back at Alhajuela in the Upper Chagres, will effectively control the torrential stream. Two locks will admit ships coming from the Atlantic into this lake. Thence, to attain the summit level at elevation 96¾ feet, three locks will be required, all at Obispo, while for elevation 69 feet two will suffice, and for elevation 32¾ feet one only, or perhaps none, will be necessary. The descent to the Pacific is made for the three projects, respectively, by two locks at Paraiso, two at Pedro Miguel, and one at Miraflores, or by one lock at Paraiso, two at Pedro Miguel, and one at Miraflores, or by two locks at Pedro Miguel, with a tidal lock at Miraflores.

All of these locks have a rock foundation, and none presents extraordinary difficulties. All are double, one chamber having a serviceable length of 738 feet and a width of 82 feet, and the other (for smaller vessels) the same length, divided by a set of intermediate gates, and a width of 59 feet. The maximum lift is 29½ feet, except that provision for 32¾ feet is made at Bohio when, very rarely, and then only for a few hours, the lake may rise to maximum flood level.

With respect to alignment of the canal the following are the conditions adopted: The curves not to have a radius less than 8,200 feet, which experience has shown to be required for easy navigation; the depth to be 29½ feet, with provision at the locks for 31¼ feet should an increase ever become desirable; the cross section never to fall below

about three times the midship section of the vessels which will navigate the canal; ample enlargements, at distances not exceeding 5½ miles, for ships to pass each other; bottom widths of 164 feet in Lake Bohio and 98½ feet in the central part; retaining the existing width (72¼ feet) in the Atlantic level, to be enlarged to 98½ feet after the canal is opened to navigation, 98½ feet in the Pacific level, and 164 feet in the channel extending through the bay from La Boca to Isle Naos, where the canal terminates.

Only two large dams are required—the first at Bohio, creating a lake which, besides acting as a flood regulator, will obviate the necessity of encountering strong currents where the route traverses the bed of the Chagres, a very important matter for ocean shipping; and the second at Alhajuela, in the Upper River, to assist in controlling the floods, to supply the summit level in the dry season, and to furnish hydraulic power, transmitted by electricity for operating the canal.

The dam at Bohio will be of earth revetted with stone, with a foundation bed of clay and abutting against rock banks. The extreme length of crest is 1,286 feet. The extreme height above the bed of the river is 75½ feet, and above the lowest point of the foundation 93½ feet. All details of construction, including the devices for controlling the river during the progress of the work, have been carefully elaborated, and will command the confidence of engineers. The sites for the two overflow weirs are remote from the dam, and an abundance of excellent material is found near at hand.

The dam at Alhajuela, about 10 miles from the canal, is to be of concrete masonry, founded on compact rock, and abutting against rock walls. The extreme length of crest is 936¾ feet. The extreme height above the bed of the river is 134½ feet, and above the lowest point of the foundation 164 feet. The cross section and the practical details of construction are in accordance with all the requirements of modern engineering. Good rock and sand are abundant in the immediate vicinity.

To connect this reservoir with the summit level a feeder 10 miles long, starting at 190¼ feet above sea level, is required. It traverses a rough country, and its construction will be relatively costly; but when compared with many of our irrigating canals west of the Mississippi it offers no serious difficulties.

The minor dams at Obispo, Paraiso, Pedro Miguel, and Miraflores will vary in height according to the project adopted: the first, second, and fourth will be of concrete masonry and that at Pedro Miguel of earth. None of them present difficulties worthy of note.

The regulating weirs will be of the "Stoney" design, which has given entire satisfaction on the Manchester Ship Canal, and all of them will be detached from the dams.

Such is a brief summary of the present condition of the studies for the Panama Canal. It remains to compare the project with that at Nicaragua. The details of the latter are so fully presented in the report of the Government commission of 1895 and accompanying documents, and are so well known in America, that a recapitulation in detail is not required here. The new commission, of which Admiral Walker is president, has as yet made no formal report; but the individual views of the three members were given in so much detail at the hearing before the Senate select committee in June last that the modifications likely to be recommended may be inferred. The essential features of the project are the following: The whole length of the route is 176½ miles. Of this distance about 67¾ miles lie in the bed of a crooked river, through

which must pass the outflow of Lake Nicaragua, draining some 3,000 square miles, and about 57¼ miles in the lake itself, calling for from 10 to 14 miles of dredging in soft mud. The summit level is fixed at 110 feet above mean tide, and both of the Government commissions recognize the extreme difficulty of regulating this level so as to avoid, on the one hand, flooding a valuable district on the Pacific side of the lake, and, on the other hand, exposing rocks in the bed of the Upper San Juan, where there are several bad rapids to be drowned or excavated before a ship channel is possible.

The Nicaragua Canal Company advocates two principal dams—one at Ochoa, on the San Juan, and the other at La Flor, west of the lake—but as the latter was regarded as impracticable by the Ludlow Commission, and apparently is not favored at the projected height by the Walker Commission, it will be left out of consideration. The Ochoa dam presents serious difficulties; and although the present commission has succeeded in finding a rock bottom at great depth (Admiral Walker estimates it, approximately, at 40 or 45 feet and Professor Haupt at 60 feet below sea level, i. e., at 80 to 85 feet and 100 feet, respectively, below the deepest part of the bed of the river), no definite plan has yet been presented for modifying the loose rock and clay dam heretofore regarded as necessary. This construction is without precedent in canal engineering; and Admiral Walker says of it: "Of course, a dam of loose rock would have to be enormous in size; it would be like moving a hill into the river."

But the alternative of digging from 80 to 100 feet to reach foundations in the bed of a river which can not be temporarily diverted, and then of raising a masonry mass to a height of 150 or 170 feet above this newly discovered rock bed, is not an easy or a safe undertaking. Moreover, to hold the summit level at 110 feet enormous embankments are required in the San Francisco Basin. They are 67 in number and 6 miles in length, and some of them will rise from 60 to 85 feet above soft mud, which must be excavated to a depth of 30 feet to reach a clay foundation. The chief engineer of the company regards these embankments as "the weakest feature of the whole route," and they appear to have impressed the present commission, as they did that of which General Ludlow was president, most unfavorably. Indeed, new surveys have been ordered to attempt to radically change the existing project, with a view to reducing the height of the dam at Ochoa and of the huge embankments, at the expense of making an equally deep cut in the eastern divide and of raising a second dam at Machuca Rapids, either retaining the site at Ochoa or replacing the dam there by one at Tambour Grande below. Of this prospective change Admiral Walker says:

> We have had some parties out to find how far we would have to run embankments, and it is quite possible they may be as bad as the San Francisco embankments. * * * I think the chances are, by putting a dam at Machuca and a dam below at Ochoa, or Tambour Grande, and taking a low-level route, we may escape this heavy work and get into Greytown with considerable less expenditure of money, and with a canal that would not, perhaps, keep its superintendent awake at nights so much.

Evidently the plans of the Nicaragua Canal can not be regarded as definitely determined. But it is not only in the construction of the canal proper that serious difficulties are to be encountered. When the writer traversed the transit route in 1856, the harbor of Greytown was open to the largest steamers, and presented no difficulty. To-day, owing to the travel of sand along the coast, under the influence of the winds and waves, the port no longer exists for seagoing vessels. The jetty con-

structed during 1890–93 by the canal company has proved a total failure, and the problem is now presented, not in the simple form of making a new port, but of reopening an old one which nature has decided to close. American engineers have had experience in the difficulty and cost of such constructions at Fernandina, at the mouth of St. Johns River, at Brazos, and at many other points; and before undertaking a canal it would seem to be prudent to reopen the port and determine the first cost and the probable annual outlay for maintenance. A canal, access to which would be subjected to occasional interruptions from natural forces now known to be in action, would be a serious mistake; and it may be added that a study of the six charts accompanying the report of the Ludlow Commission, showing the condition of this port at five different dates between 1832 and 1895, is not reassuring.

As to the important element of the cost of the canal, there appears to be considerable difference of opinion. The chief engineer of the company estimated it, in 1895, at $69,893,660, and the Ludlow Commission, at the same date, at $133,472,893. Engineers will recognize the impossibility of exact figures in the present state of the investigations now in progress under the Walker Commission; and each of the members has carefully guarded himself from expressing a definite opinion. Admiral Walker, at his recent examination before the Senate committee, said:

> We have made no figures. It is no use to figure on the thing until we have all our data. But I do not see why that canal can not be built. I should think myself, speaking as anybody in the street might speak, that the canal could be put through for $125,000,000, and it would not surprise me if it came considerably below that.

Professor Haupt, on the same occasion, stated that he thought the canal could be built "inside of $90,000,000."

General Hains said:

> I think a canal of the dimensions that have generally been referred to—30 feet deep, with locks 650 feet long, and all the cross-sections that have been referred to as necessary in rock and earth—could be constructed for a maximum sum of about $140,000,000, with a possible reduction of $25,000,000 or $30,000,000. * * * But the trouble is that just now I am not prepared to give an opinion that would be worth anything.

Evidently in view of previous experience in such works showing that the actual cost has usually very largely exceeded even carefully prepared estimates, it would be premature to form an opinion as to the outlay that will be required for the Nicaragua Canal; but a general idea of that demanded by the two routes may be formed from the following comparison:

Panama.	*Nicaragua.*
Two good harbors now existing.	Two harbors to be created; one of them (Greytown) presenting unusual natural difficulties.
A good railroad now existing along the entire route.	A long and difficult railroad to be constructed, which Gen. Hains considers should extend along all the route, except the lake portion, *i. e.*, for a distance of 120 miles.
Actual construction, now well advanced, (about two-fifths entire length actually completed) and remaining difficulties accurately known.	Practically nothing done in way of construction, and many of the essential elements undecided.
No constructions projected which are not justified by recognized engineering practice.	One or two dams projected wholly without precedent in canal work; and many embankments which must be permanent elements of danger.

Panama—Continued.	*Nicaragua*—Continued
Except the works at Bohio, no difficult excavations or constructions to be made where the annual rainfall exceeds 93 inches (only about 50 per cent more than on our Gulf coast).	The most difficult works lie in a region where the observations of the canal company indicate the annual rainfall to be nearly 22 feet (256 inches), or nearly three times as much as at the Panama site.
Route lies wholly in Colombia, where all interests will be benefited by the canal.	Route lies on the border of Nicaragua and Costa Rica, where local jealousy already exists, which may prejudice the interests of the canal.
Distance to be lighted and supervised when the canal is completed, 46 miles.	Distance to be lighted and supervised when the canal is completed, 176 miles, or nearly four times as great as the Panama.
No active volcanoes within about 200 miles of the route of the canal, and earthquakes therefore less probable.	Active volcanoes near route; one, Omotepe, on an island in Lake Nicaragua, and another, Onose, only about 40 miles from the locks. An earthquake on April 29, 1898, at Léon, destroyed several buildings.
Cost carefully estimated on detailed plans at about one hundred million dollars.	Cost estimated by the Government commission, on data recognized as wholly insufficient, at about one hundred and thirty-three million dollars.
Concessions from Colombia (upon which whole undertaking is based) ample, satisfactory, and unquestioned.	Concessions from Nicaragua and Costa Rica (upon which whole undertaking is based) either expired, or expire next year, and officially declared by Nicaragua to be forfeited and void.

But let us assume that both canals are constructed and open to navigation, and then compare the two routes, by considering which of them would undoubtedly be selected by vessels seeking to cross the Isthmus. This is a crucial test which will reveal their relative merits:

Panama.	*Nicaragua.*
Ports both known to be good and easy of access.	Both ports artificial, to which access may be doubtful, especially on Atlantic side.
Length of route 46 miles, and time of transit 14 hours.	Length of route 176 miles, and time of transit not less than 44 hours.
Summit level probably 103 feet, and perhaps only 66 feet.	Summit level 110 feet.
Locks double from the opening of the canal, one chamber 738 by 82 feet and the other 738 by 59 feet, with intermediate gates.	Locks single (subsequently to have another chamber added); dimensions 350 by 80 feet.
Curvature gentle. Smallest radius 8,200 feet. Of the 46 miles 26¼ are straight and 15 have radii equal to or exceeding 9,850 feet.	Curvature too sharp. Smallest radius in canal proper 4,000 feet. For 68 miles the route traverses the San Juan River, where, to gain 47¼ miles as a bird flies, it is necessary to travel 67¾ miles—a loss of 43 per cent.
No troublesome winds or river currents to be encountered, even in times of flood.	Heavy trade winds and strong river currents.

It would seem from this analysis that there can be little difference of opinion as to which is the better route. But perhaps some enthusiastic advocate will say, "The Nicaragua Canal may be the more costly, may present more natural difficulties, may require more time for construction, and may be less easy of transit; but let us have an American canal, made with our own money and wholly under our own control."

Such considerations are outside the province of an engineer. But, perhaps, it may be suggested that we have already interests and respon-

sibilities on the Isthmus, where the Panama Railroad was built and is now controlled by an American company, under American protection; that the business control of any canal must vest in its stock and bondholders in time of peace, while, in fact, in time of war—unless its neutrality be guaranteed by the great maritime powers—the transit will be controlled by the belligerent having command of the sea.

May it not, then, be wiser for our Government to extend its powerful assistance to what nature has determined as the best route, rather than to expend more time and more money for what, after all is said, must remain a distinctly inferior canal, unable to compete with its rival for the commerce of the world?

HENRY L. ABBOT.

55TH CONGRESS, 3d Session. } SENATE. { DOCUMENT No. 42.

USE OF BREECH MECHANISM FOR GUNS MANUFACTURED UNDER LETTERS PATENT NO. 541042.

LETTER

FROM

THE ACTING SECRETARY OF THE NAVY,

IN RESPONSE TO

RESOLUTION OF THE SENATE OF DECEMBER 14, 1898, CALLING ON THE SECRETARY OF WAR AND THE SECRETARY OF THE NAVY FOR INFORMATION RELATIVE TO USE OF BREECH MECHANISM FOR GUNS MANUFACTURED UNDER LETTERS PATENT NO. 541042, ISSUED TO LIEUT. FRANK F. FLETCHER, ETC.

DECEMBER 21, 1898.—Referred to the Committee on Naval Affairs and ordered to be printed.

NAVY DEPARTMENT,
Washington, December 20, 1898.

SIR: Referring to the resolution, dated the 14th instant, of the Senate, calling on the Secretary of War and the Secretary of the Navy for information as to what amounts have been paid or agreed to be paid as royalties for the use of breech mechanisms for guns manufactured under letters patent No. 541042, issued to Lieut. Frank F. Fletcher, and as to what inquiries, if any, were made by the Departments, respectively, relative to the priority of the invention under said letters patent, and the validity of the patent as against all other inventors, I have the honor to inclose herewith a copy of a report of the Chief of the Bureau of Ordnance of this Department, to whom the matter was referred for a statement in the premises, together with a copy of the agreement therein referred to between the American Ordnance Company and the Bureau, which papers are believed to contain all the information comprehended by said resolution, so far as the same relates to guns made for the Navy.

Very respectfully,

CHAS. H. ALLEN,
Acting Secretary.

The PRESIDENT OF THE UNITED STATES SENATE.

DEPARTMENT OF THE NAVY,
BUREAU OF ORDNANCE,
Washington, December 19, 1898.

Respectfully returned to the office of the Judge-Advocate-General, Navy Department.

1. The Bureau has thus far completed the manufacture of 138 guns having the breech mechanism covered by the patent referred to, and has paid to the American Ordnance Company, which is the owner of the said patent, the sum of $13,300 as royalties thereon, this being in accordance with an agreement entered into on the 29th of February, 1896, between the American Ordnance Company and the Bureau of Ordnance.

2. The United States patent itself could properly be considered sufficient evidence of priority of invention, but, in addition to this, the Bureau's knowledge of the state of the art convinced it that the subject-matter of the patent was novel and its claims valid before the agreement to pay royalties was entered into.

3. Should anyone at any time contest the validity of the patent referred to or claim it to be an infringement upon his rights, the American Ordnance Company, which is a responsible corporation, has agreed, in writing, to hold the United States harmless and to contest in the courts any proceedings that may be taken, giving bond, if required, in a sufficient sum to meet any judgment which may be found against the Department.

CHARLES O'NEIL,
Chief of Bureau of Ordnance.

LICENSE, WITH ROYALTY.

This agreement, made this 29th day of February, 1896, between the American Ordnance Company, party of the first part, and the Bureau of Ordnance of the U. S. Navy Department, party of the second part.

Witnesseth: That whereas letters patent of the United States No. 541042 were granted on June 11, 1895, to Albert Ordway, as assignee to Frank F. Fletcher, for an improvement in "breech mechanism for ordnance;" and whereas the said Ordway, on February 27, 1896, sold, assigned, and transferred the aforesaid patent to the American Ordnance Company, the party of the first part; and whereas the party of the second part is desirous of manufacturing guns containing said patented improvement: Now, therefore, the parties have agreed as follows:

I. The party of the first part hereby licenses and empowers the party of the second part to manufacture, subject to the conditions hereinafter named, at such place or places as may be convenient, to the end of the term for which said letters patent were granted containing the patented improvements, and to use and sell the same.

II. The party of the second part agrees to make full and true returns to the party of the first part upon the thirtieth day of June and the thirty-first day of December in each year of all guns containing the patented improvements manufactured by them.

III. The party of the second part agrees to pay to the party of the first part, as a license fee upon every gun that has been or may hereafter be manufactured by the party of the second part containing the patented improvements hereinbefore named, ninety dollars upon every gun of three inches, or less, caliber, and one hundred dollars upon every gun exceeding three inches in caliber.

IV. Upon failure of the party of the second part to make returns or to make payments of license fees as herein provided for ninety days after the dates herein named, the party of the first part may terminate this license by serving a written notice upon the party of the second part, but the party of the second part shall not thereby be discharged from any liability to the party of the first part for any license fees due at the time of the service of the notice.

In witness whereof the parties above named have hereunto set their hands the date and year above written, at Washington, District of Columbia.

AMERICAN ORDNANCE COMPANY.
By ALBERT ORDWAY, *President.*

Witnesses:
H. C. SHERIDAN,
A. Y. LEECH, JR.,
SAML. K. BEHREND.

W. T. SAMPSON,
Chief of Bureau of Ordnance.

Received for record January 16, 1897, and recorded in Liber X54, page 324, of Transfers of Patents.

In testimony whereof I have caused the seal of the Patent Office to be hereunto affixed.

[SEAL.]

JOHN S. SEYMOUR,
Commissioner of Patents.

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 43.

ENGINEERS OF DEPARTMENTAL BUILDINGS.

JANUARY 5, 1899.—Referred to the Committee on Appropriations and ordered to be printed.

Mr. COCKRELL presented the following

PETITION OF ENGINEERS OF DEPARTMENTAL BUILDINGS RELATIVE TO THEIR SALARIES.

WASHINGTON, D. C., *December 8, 1898.*

We, the engineers of departmental buildings, respectfully urge upon Congress to kindly consider our petition as presented, and to have the same enacted into law for the following reasons, to wit:

First. Because our salaries are not in conformity with our duties and the responsibilities in connection therewith—the inadequacy of our present salaries to live comfortably upon and save something for a rainy day to support our families and clothe and educate our children.

Second. Because the salaries of engineers, generally, is not commensurate with the duties of the position as compared with the salaries of clerks in the several Departments, who have no responsibilities whatever aside from the regular routine duties and stipulated hours of work—serving no regular apprenticeship other than the theoretical knowledge gained in school—the gradation being first, second, third, and fourth class, with salaries ranging from $900 to $1,800 per annum. While we, in order to become mechanical engineers were required to serve an apprenticeship of from three to five years in a machine shop at engine building, and then for as many more years in handling and managing steam machinery and engines, either on land or sea, before being entitled to pass an examination of proficiency and receiving a license as a qualified engineer, generally at the lowest grade.

We simply make this statement more in conformity with our petition and not that we claim any superiority over our fellow-men, and to impress upon your honorable body that we feel the dignity of equality.

Hoping you will kindly and favorably consider our appeal, and by its becoming a law you will merit our esteem; we, the honor and profit thereby.

Respectfully submitted.

DANL. JOHNSON,
J. A. WATTS,
WM. H. H. HAWES,
JAS. O'DONNELL,
JOHN L. BOOTH,
JOHN A. HARVEY,
Engineers of Departmental Buildings.

We, the undersigned, engineers of the departmental buildings, respectfully petition Congress to enact into law the following, to wit:

The equalizing of the salaries and duties of chief and assistant engineers, as follows:

Engineers of the departmental buildings shall be designated as chief engineers, first assistant engineers, and second assistant engineers. Chief engineers to receive a salary of $1,500 per annum; first assistant engineers to receive a salary of $1,200 per annum; second assistant engineers to receive a salary of $1,000 per annum.

When but one engineer is employed in the departmental building, he shall be designated as chief engineer with like salary and duties; when three or more engineers are employed, all except the chief and first assistant engineer shall be designated as second assistant engineers.

The chief engineer shall have charge of the boilers and machinery and have general supervision over all mechanical work appertaining thereto, under the direction of the superintendent of the building. Assistant engineers shall be subject to the orders of the chief engineer and perform all duties assigned them in their several stations. During the temporary absence of the chief engineer the first assistant engineer shall act in his stead.

Promotions to be made according to classification and seniority of service if, in the judgment of the Secretary or head of the Department, the qualifications and ability of the candidate will guarantee it to be for the best interests of the Department. Insobriety will be deemed sufficient reason to debar the employment of all persons in the engineer department.

Respectfully submitted.

DANL. JOHNSON,
Engineer State, War, and Navy Building.
J. A. WATTS,
Engineer United States Treasury Building.
WM. H. H. HAWES,
Engineer Department of Justice Building.
JAS. O'DONNELL,
Engineer Post-Office Department Building.
JOHN L. BOOTH,
Engineer Department of the Interior Building.
JOHN A. HARVEY,
Engineer Department of Agriculture Building.

OFFICE OF SUPERINTENDENT
STATE, WAR, AND NAVY DEPARTMENT BUILDING,
Washington, D. C., February 23, 1898.

I recommend the above most heartily.

G. W. BAIRD,
Chief Engineer, U. S. N., Superintendent.
WALLACE H. HILLS,
Assistant Superintendent Treasury Building.
CECIL CLAY,
Chief Clerk Department of Justice and Superintendent of Building.
R. B. MERCHANT,
Disbursing Clerk and Superintendent, Post-Office Department.

By the enactment of this bill the aggregate amount of appropriation will be $2,560, and also avoid in the future any special legislation in behalf of individual engineers.

Engineers.	Present salary.	Increase.	Total.
Treasury building:			
One engineer	$1,400.00	$100.00	$1,500.00
One assistant engineer	1,000.00	200.00	1,200.00
One assistant engineer	720.00	280.00	1,000.00
One assistant engineer	720.00	280.00	1,000.00
Total	3,840.00	860.00	4,700.00
State, War and Navy building:			
One engineer	1,200.00	300.00	1,500.00
One assistant engineer	1,000.00	200.00	1,200.00
Total	2,200.00	500.00	2,700.00
Post-Office building:			
One engineer	1,400.00	100.00	1,500.00
One assistant engineer	1,000.00	200.00	1,200.00
Total	2,400.00	300.00	2,700.00
Interior building:			
One engineer	1,200.00	300.00	1,500.00
One assistant engineer	1,000.00	200.00	1,200.00
Total	2,200.00	500.00	2,700.00
Department of Justice building:			
One engineer	1,200.00	300.00	1,500.00
Agricultural building:			
One engineer	1,400.00	100.00	1,500.00
Summary of total	13,240.00	2,560.00	15,800.00

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 44.

ROYALTIES PAID FOR BREECH-LOADING MECHANISM.

LETTER

FROM

THE SECRETARY OF WAR,

IN RESPONSE

TO RESOLUTION OF THE SENATE OF DECEMBER 14, 1898, RELATIVE TO ROYALTIES PAID FOR THE USE OF BREECH-LOADING MECHANISM OF GUNS.

JANUARY 5, 1899.—Referred to the Committee on Military Affairs and ordered to be printed.

WAR DEPARTMENT,
Washington, January 3, 1899.

SIR: In response to Senate resolution of 14th ultimo, directing the Secretary of War and the Secretary of the Navy

to transmit to the Senate statements showing what amounts, if any, have been paid or agreed to be paid by their Departments as royalties for the use of breech-loading mechanism of guns under the letters patent issued to Lieut. Frank F. Fletcher, dated June 11, 1895, No. 541042, and also to state what inquiries, if any, were made by their Departments relative to the priority of the inventions under such patent and the validity of the patent as against all other inventors,

I have the honor to inform the Senate, on behalf of this Department, that the Chief of Ordnance, United States Army, to whom the matter was referred, reports as follows:

The Ordnance Department of the Army has never paid nor agreed to pay royalties for the use of breech-loading mechanism for guns under letters patent issued to Lieut. Frank F. Fletcher. A gun with Lieutenant Fletcher's breech mechanism has been tested, but with the understanding that no royalties would be paid for the experimental gun.

Very respectfully,

R. A. ALGER, *Secretary of War.*

Hon. GARRET A. HOBART,
Vice-President of the United States, President of the Senate.

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 45.

ESTIMATED COST OF BATTLE SHIPS AND CRUISERS.

LETTER

FROM

THE SECRETARY OF THE NAVY,

TRANSMITTING,

IN RESPONSE TO RESOLUTION OF THE SENATE OF DECEMBER 14, 1898, COPY OF A JOINT REPORT MADE BY THE CHIEFS OF THE BUREAUS OF CONSTRUCTION AND REPAIR AND STEAM ENGINEERING, SHOWING THE ESTIMATED COST OF THE FIFTEEN BATTLE SHIPS AND CRUISERS RECOMMENDED AS AN INCREASE OF THE NAVY.

JANUARY 5, 1899.—Referred to the Committee on Naval Affairs and ordered to be printed.

NAVY DEPARTMENT,
Washington, January 3, 1899.

SIR: Replying to the resolution of the Senate of December 14, 1898, directing that the Senate be informed of the estimated cost of the fifteen battle ships and cruisers recommended as an increase of the Navy in the Report of the Secretary of the Navy of November 15, 1898, including the cost of the armor at the prices now being paid and the cost of the armament, I have the honor to inclose herewith a copy of a joint report made by the chiefs of the Bureaus of Construction and Repair and Steam Engineering, showing the estimated cost of the vessels referred to in all matters under the cognizance of those Bureaus; also a copy of a report from the chief of the Bureau of Ordnance, giving the cost of the armor and armament of these vessels.

I have the honor to be, sir, very respectfully,

JOHN D. LONG, *Secretary.*

The PRESIDENT OF THE UNITED STATES SENATE.

[Fourth indorsement.]

WASHINGTON, D. C., *December 17, 1898.*

Respectfully returned to the Department.

In compliance with the within resolution of the United States Senate, we have the honor to submit the following estimated cost of the fifteen

battle ships and cruisers referred to, in all matters under the cognizance of the Bureaus of Construction and Repair and Steam Engineering:

I. Three seagoing sheathed and coppered battle ships of about 13,500 tons displacement, $3,600,000 each	$10,800,000
II. Three sheathed and coppered armored cruisers of about 12,000 tons trial displacement, $4,000,000 each	12,000,000
III. Three sheathed and coppered protected cruisers of about 6,000 tons trial displacement, $2,150,000 each	6,450,000
IV. Six sheathed and coppered cruisers of about 2,500 tons trial displacement, $1,141,800 each	6,850,800
Total estimated cost under Bureaus of Construction and Repair and Steam Engineering	36,100,800

GEORGE MELVILLE,
Engineer in Chief, U. S. N., Chief Bureau of Steam Engineering.

DARIUS A. GREEN,
Acting Chief of Bureau of Construction and Repair.

NAVY DEPARTMENT, BUREAU OF ORDNANCE,
Washington, D. C., December 19, 1898.

SIR: In compliance with the request from the United States Senate of December 14, 1898, for information as to the cost of armor and armament for the fifteen new vessels therein referred to, the Bureau has the honor to report as follows:

Battle ships (3).

Armor, 3,100 tons (at $400 per ton)	$1,240,000
Main and secondary batteries	585,000
Ammunition and stores	465,000
For each vessel	2,290,000

First-class cruisers (3).

Armor, 1,400 tons (at $400 per ton)	560,000
Main and secondary batteries	340,000
Ammunition and stores	400,000
For each vessel	1,300,000

Second-class cruisers (3).

Armor, 70 tons (at $400 per ton)	28,000
Main and secondary batteries	230,000
Ammunition and stores	320,000
For each vessel	578,000

Third-class cruisers (6).

Armor, 56 tons (at $400 per ton)	22,400
Main and secondary batteries	110,000
Ammunition and stores	145,000
For each vessel	277,400
Total cost of armor and armament for the fifteen vessels	14,168,400

Very respectfully,

CHARLES O'NEIL,
Chief of Bureau of Ordnance.

The SECRETARY OF THE NAVY.

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 46.

FIREPROOF FACILITIES, OFFICE OF SURVEYOR DISTRICT OF COLUMBIA.

LETTER

FROM

THE ACTING SECRETARY OF THE TREASURY,

TRANSMITTING

A COMMUNICATION FROM THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA, SUBMITTING A SUPPLEMENTAL ESTIMATE OF APPROPRIATION FOR FIREPROOF FACILITIES FOR THE OFFICE OF THE SURVEYOR OF THE DISTRICT.

JANUARY 5, 1899.—Referred to the Committee on Appropriations and ordered to be printed.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., December 28, 1898.

SIR: I have the honor to transmit herewith, for the consideration of Congress, copy of a communication from the Commissioners of the District of Columbia, of the 24th instant, submitting a supplemental estimate of appropriation for inclusion in the District of Columbia appropriation bill, now pending, for fireproof facilities for the office of the surveyor, $3,000.

Respectfully, yours,

O. L. SPAULDING,
Acting Secretary.

The PRESIDENT OF THE SENATE.

OFFICE COMMISSIONERS OF THE DISTRICT OF COLUMBIA,
Washington, December 24, 1898.

SIR: The Commissioners of the District of Columbia have the honor to submit herewith a supplemental estimate of $3,000 for fireproof facilities for the office of the surveyor District of Columbia, and to request that you will transmit the same to Congress for inclusion in the pending District appropriation bill.

Respectfully,

JOHN B. WIGHT,
President Board of Commissioners District of Columbia.

Hon. LYMAN J. GAGE,
Secretary of the Treasury.

Supplemental estimates of appropriations required for the service of the fiscal year ending June 30, 1900, by the District of Columbia.

Contingent and miscellaneous expenses, District of Columbia:

Surveyor's office—

For fireproof facilities for the office of the surveyor of the District of Columbia, to be immediately available (submitted)..... $3,000

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 47.

PARTIAL LIST OF LOTS IN THE DISTRICT OF COLUMBIA SOLD BY THE UNITED STATES.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

IN FURTHER RESPONSE TO THE RESOLUTION OF THE SENATE OF JANUARY 27, 1898, A LETTER FROM THE CHIEF OF ENGINEERS, TOGETHER WITH A PARTIAL LIST OF LOTS IN THE DISTRICT OF COLUMBIA SOLD BY THE UNITED STATES.

JANUARY 5, 1899.—Referred to the Committee on the District of Columbia and ordered to be printed.

WAR DEPARTMENT,
Washington, January 3, 1899.

SIR: In further compliance with Senate resolution of January 27, 1898, directing the Secretary of War "to transmit to the Senate, at as early a date as possible, the numbers and locations of all lots in the District of Columbia the title to which the records in the office of the commissioner of public buildings and grounds show to be in the United States; also a report of all lots in the District of Columbia sold or donated by the United States, the numbers of the squares in which such lots are located, the date of sale, the names of purchasers, and the amounts received," I have the honor to transmit herewith a letter from the Chief of Engineers, dated December 29, 1898, together with a list of all lots in the District of Columbia sold by the United States, compiled from the old records in the office of public buildings and grounds, covering squares numbered from 1 to 245 consecutively.

Further statements covering information called for by the resolution referred to will be submitted as promptly as the very limited clerical force at the disposal of the officer in charge of public buildings and grounds will permit the necessary examination of records and tabulation of results.

Very respectfully,

R. A. ALGER,
Secretary of War.

HON. GARRET A. HOBART,
Vice-President of the United States,
President United States Senate.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 29, 1898.

SIR: The Senate of the United States, by resolution dated January 27, 1898, directed the Secretary of War to transmit to the Senate, at as early a date as possible, the numbers and locations of all lots in the District of Columbia the title to which the records in the office of the commissioner of public buildings and grounds show to be in the United States; also a report of all lots in the District of Columbia sold or donated by the United States, the numbers of the squares in which such lots are located, the date of sale, the names of purchasers, and the amounts received.

The information called for by the above-mentioned resolution, excepting as to lots sold, was furnished the Senate by the Secretary of War May 26, 1898, and printed in Senate Doc. No. 277, Fifty-fifth Congress, second session, and I have now the honor to submit, in further compliance with your instructions, a list of all lots in the District of Columbia sold by the United States, compiled from the old records in the office of public buildings and grounds, covering squares numbered from 1 to 245 consecutively.

Col. Theo. A. Bingham, U. S. A., the officer in charge of public buildings and grounds, in submitting this list, states that there are in all about 1,200 squares to be thus reported on, and it is estimated that it will require about three months more to complete the first half.

It is regretted that the information contemplated by the Senate resolution can not be more promptly presented, but every effort is being made to compile the data on hand, and the work is being conducted with vigor. Further report will be presented as soon as the very limited clerical force at the disposal of the officer in charge of public buildings and grounds will permit the necessary examination of records and tabulation of results.

Very respectfully, your obedient servant,

JOHN M. WILSON,
Brig. Gen., Chief of Engineers,
U. S. Army.

Hon. R. A. ALGER,
Secretary of War.

Errata, Senate Doc. No. 47, Fifty-fifth Congress, third session.

[To be inserted opposite page 3.]

Page 13.—In column of lot numbers, bottom line, omit "22."
Page 13.—Insert the following at bottom of page:

No. of square.	Lot number.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
166	22	1	June 1, 1801	John Templeman	June 1, 1801	$1,932.50	In this amount are included the sums paid for lots 1 and 2 in square 55; lots 1 and 2 in square 56; lots 11, 17, and 18 in square 77; lot 4 in square 80; and lots 1, 2, 3, 9, 10, 11, 12, 13, and 19 in square 141.

Page 15.—In column of remarks, opposite square 185, omit "south half of lot 10."
Page 16.—Seventh line from bottom, in column of amounts received, for "540.00" read "5,440.00."

Partial list of lots in the District of Columbia sold by the United States.

[Compiled from old records in the office of public buildings and grounds.]

No. of square.	Lot numbers.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
1	1, 8, 17, 18, and 20	5	Jan. 3, 1797	Robert Peter			Certificate in fee given, proceeds not of record.
1	2	1	July 29, 1802	Benj. Stoddert			The amount received for this lot is included in that received for lots 2, 3, etc., in square No. 882.
1	8, 9, 10, and 13	4	May 18, 1793	Leonard Harbaugh	June 23, 1798	$800.00	
1	12	1	June 24, 1793	Kenrick Konig	July 18, 1796	266.75	
2	2	1	Oct. 22, 1802	Benj. Stoddert	Oct. 22, 1802	500.09	
4	1	1	Oct. 9, 1792	Richard Ober	Nov. 20, 1794	178.60	
4	2	1	do	B. Lee	Nov. 24, 1795	152.00	
4	3, 15, 16, 17, 18, and 19	6	Mar. 5, 1795	Thos. Johnson, of Frederick	Sept. 8, 1798	3,992.15½	
W. 4	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11	11	July 18, 1796	do	May 7, 1801	454.66	
N. 4	3	1	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	20.00	
5	2, 4, 6, and 26	4	do	do	do	80.00	
5	8	1	Oct. 9, 1792	Richard Ober	Nov. 20, 1794	189.30	
5	11	1	do	A. Contee	Oct. 13, 1795	293.33	
5	17	1	do	do	do	92.17	
5	12	1	do	George Warley	Jan. 1, 1795	229.30	
5	18	1	do	Col. Wm. Deakins	Oct. 5, 1796	120.16	
5	21 and 22	2	Aug. 27, 1799	Walter S. Chandler			The amount received for these lots is included in that received for lots 1, 2, etc., square No. 952.
5	23 and 24	2	do	do			Do.
6	1	1	Sept. 22, 1802	John Templeman	Sept. 22, 1802	173.46	
6	7	1	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	20.00	
6	8	1	Sept. 2, 1802	do	Sept. 2, 1802	130.00	
7	1	1	Oct. 22, 1802	do	Oct. 22, 1802	111.00	
7	3	1	do	do	do	107.00	
8	1, 2, 3, 4, 5, 6, 7, 17, and 18	9	Jan. 25, 1794	John Templeman	Jan. 25, 1794	900.00	
9	1	1	Jan. 2, 1795	Tobias Lear & Co	Oct. 19, 1796	1,539.46	
9	3	1	June 22, 1793	do	do	666.60	
10	1 and 3	2	Aug. 28, 1797	James Hoban	Oct. 1, 1797	501.00	
11	1 and 3	2	May 13, 1801	Chas. Wayman	Aug. 28, 1801	176.00	
12	2, 3, 8, and 12	4	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	80.00	
12	5	1	July 20, 1793	George Wilson	Jan. 28, 1797	266.60	
S. of 12	2	1	Aug. 8, 1811	Chas. W. Goldsborough	Aug. 8, 1811	870.09	
13	3	1	July 1, 1814	John Lipscomb	July 1, 1814	300.00	
13	4	1	Mar. 26, 1814	William Whann	Mar. 26, 1814	880.00	
W. of 14	1	1	Nov. 25, 1800	Henry Gaither	Nov. 25, 1800	191.06	
14	3	1	Feb. 9, 1809	Chas. C. Jones	Feb. 9, 1809	500.00	
15	1, 2, 3, 13, 14, 15, and 16	7	June 17, 1796	Thos. Johnson, F'k	July 18, 1796	772.11	
16	11	1	May 10, 1813	Joseph Nourse	May 10, 1813	252.66	
16	15	1	Oct. 9, 1792	Walter Hellen	Mar. 11, 1795	81.00	
16	16	1	do	Walter Hellen	do	63.00	

Partial list of lots in the District of Columbia sold by the United States—Continued.

No. of square.	Lot numbers.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
16	17	1	Oct. 9, 1792	James Hoban	Jan. 13, 1801	$266.67	
16	22	1	do	Capt. Richd. Ober	Nov. 20, 1794	168.00	
16	23	1	do	do	do	216.00	
17	1, 2, 3, 12, 13, 14, 15, 16, and 17	9	Oct. 20, 1802	Benj. Stoddert	Oct. 22, 1802	180.00	
20	1, 2, 3, 4, 5, 6, 7, 8, 19, and 20	10	do	Ann Brodena	do	100.00	
21	1	1	June 23, 1794	George Washington	July 18, 1796	533.33	
21	2 and 3	2	Apr. 18, 1795	do	do	1,066.66	
21	4	1	Apr. 23, 1794	do	do	533.33	
22	1	1	May 24, 1811	Nathl. G. Maxwell	May 24, 1811	688.82	
22	2	1	June 30, 1828	Lucas & Cumberland	June 30, 1828	137.95	
23	2 and 12	2	Sept. 23, 1802	William Glover	Sept. 23, 1802	266.88	
23	4, 6, and 10	3	Apr. 30, 1799	Micklin & Griffeth			The amount received for these lots is included in that received for lots 1, 4, 5, etc., in square No. 643.
24	5, 6, 7, 8, 9, 10, 11, and 12	8	Mar. 22, 1816	William Blanchard	Jan. 1, 1817	2,519.94	
24	22, 23, 24, 25, 26, 27, 28, 29, and 30.	9	Nov. 13, 1812	Fench Ringgold	Nov. 13, 1812	1,193.46	
25	5 and 6	2	July 25, 1816	do	Oct. 1, 1816	1,525.00	
25	7, 8, 9, 10, and 11	5	Aug. 10, 1816	Nichold & Floyd	Aug. 10,	1,589.88	
25	19, 20, 21, 22, 23, 24, and 25	7	Jan. 1, 1816	James Thompson	May 10, 1820	1,550.50	
26	2	1	July 25, 1816	Morris Lambert	Jan. 1, 1817	1,854.50	
27	4, 5, 6, 7, 8, and 9	6	Nov. 11, 1800	Anna French	Nov. 11, 1800	555.83	
28	1, 5, 6, 28, and 29	5	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	100.00	
28	7, 10, 11, 23, 24, and 25	6	July 29, 1802	do			The amount received for these lots is included in that received for lot 2, etc., square No. 882.
28	15	1	Oct. 19, 1798	Carey Pratt	Oct. 19, 1798	68.00	
28	16	1	July 26, 1799	William Whann	July 26, 1799	137.78	
28	17	1	June 9, 1799	Richard Elliot	June 9, 1799	133.85	
29	1, 2, and 3	3	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	60.00	
30	1, 2, and 6	3	do	do	do	60.00	
31	1, 2, 3, 10, 14, and 15	6	do	do	do	120.00	
31	4, 5, 6, and 7	4	Jan. 31, 1797	Robert Peter			Certificate in fee ordered; proceeds not stated.
32	5	1	Dec. 14, 1816	Samuel Sandford	Dec. 14, 1816	20.31	
33	1, 2, 7, 8, 9, 25, and 26	7	Oct. 20, 1802	Ann Brodeau	Oct. 20, 1802	70.00	
33	3	1	Mar. 25, 1846	Charles B. Fisk	Mar. 25, 1846	137.34	
33	5 and 6	2	Dec. 10, 1794	Wm. Thornton	June 1, 1802	533.33	
33	10 and 11	2	Jan. 13, 1803	do	Jan. 13, 1803	223.14	
35	2	1	Sept. 19, 1816	John Munts	Sept. 19, 1816	550.00	
35	4	1	Nov. 10, 1852	Chas. Van Patten	Nov. 10, 1852		The amount received for this lot is included in that received for lot 14 in square No. 50.
35	6	1	Apr. 10, 1812	Richard Elliott	Apr. 10, 1812	100.00	
35	8	1	Nov. 10, 1852	John L. Corcoran	Nov. 10, 1852	45.28	
36	4, 5, 6, and 7	4	July 31, 1815	Nicholas Travers	July 31, 1815	663.88	
36	8 and 9	2	May 27, 1856	E. Travers	June 27, 1857		The amount received for these lots is included in that received for lots 3, 4, etc., square No. 1125.

36	17	1	Dec. 31, 1832	Joel Crittenden	Dec. 31, 1832	112.83	
36	18	1	Nov. 10, 1852	Wm. Butler	Nov. 10, 1852		The amount received for this lot is included in that received for lots 3 and 4, square No. 1086.
36	19	1	Jan. 7, 1854	R. B. Lloyd	May 24, 1854	137.96	
36	20 and 21	2	Nov. 10, 1852	Maxwell Woodhul	Nov. 10, 1852		The amount received for these lots is included in that received for lot 12 in square No. 1084.
36	22, 23, and 24	3	do	Montgomery Hunt	do		The amount received for these lots is included in that received for lots 15 and 16 in square No. 1093.
37	3, 4, 5, 6, and 7	5	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	100.00	
37	8, 15, 16, 17, 18, and 19	6	Dec. 4, 1801	John Murdock			The amount received for these lots is included in that received for lots 6, 7, etc., in square No. 457.
38	1, 2, 3, 4, and 5	5	Feb. 12, 1795	Uriah Forrest	Feb. 12, 1795	2,000.00	Amount received for lot 18 in square No. 101 is included in this amount.
39	2	1	Nov. 25, 1800	Hugh Campbell	Nov. 25, 1800	141.30	
40	1 and 8	2	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	42.00	
40	10	1	Feb. 17, 1801	do			The amount received for this lot is included in that received for lots 19 and 20 in square No. 143.
40	9, 11, 12, and 13	4	May 2, 1801	do	May 2, 1801	372.29	
41	1, 2, 3, 4, 5, 14, 15, and 16	8	Oct. 20, 1802	do	Oct. 20, 1802	160.00	
42	1 and 2	2	July 31, 1801	John Templeman	July 31, 1801		The amount received for these lots is included in that received for lots 21, 22, etc., in square No. 166.
42	11, 12, 13, 14, 15, and 16	6	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	120.00	
43	1	1	Mar. 2, 1848	Samuel Devaughn	Mar. 2, 1848	335.23	
43	2	1	Jan. 2, 1804	E. Caldwell (Scott's estate)	June 2, 1804		The amount received for this lot is included in that received for lot 3, etc., in square No. 83.
44	4	1	Mar. 2, 1848	Samuel Devaughn	Mar. 2, 1848	107.10	
44	5	1	Nov. 10, 1852	Geo. W. Stuart	Nov. 10, 1852	232.14	
44	9, 10, 11, and 15	4	do	W. A. T. Maddox	do	775.35	
44	12, 13, and 14	3	do	Maxwell Woodhul	do		The amount received for these lots is included in that received for lot 12, square No. 1084.
47	2	1	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	20.00	
48	3	1	Dec. 31, 1828	C. & M. Hines	Dec. 31, 1828	208.50	
48	4 and 5	2	Aug. 1, 1845	Thos. Corcoran	Aug. 1, 1845		The amount received for these lots is included in that received for lot 7, square No. 599.
49	5, 6, 8, 11, 12, and 13	6	do	do	do		Do.
49	8	1	May 8, 1845	Elizabeth Silence	May 8, 1845	19.34	
50	1 and 2	2	Oct. 15, 1847	Wm. Ball	Oct. 15, 1847	45.19	
50	10	1	Apr. 19, 1845	Juleus A. Peters	Apr. 19, 1845	29.97	
50	11	1	Apr. 24, 1845	John Fister	Apr. 24, 1845	32.99½	
50	12	1	May 19, 1852	do	May 19, 1852	66.00	
50	13, 15, and 16	3	Nov. 10, 1852	Alexr. Rutherford	Nov. 10, 1852	74.87	
50	14	1	do	Chas. H. Van Patten	do	62.60	
50	17, 26, 27, and 28	4	do	Wm. B. Todd	do		The amount received for these lots is included in that received for lot 15, square No. 1097.
50	25	1	do	Andrew Rothwell	do		The amount received for this lot is included in that received for lots 11 and 12, square No. 1121.
51	2, 14, 17, and 18	4	do	Robt. S. Patterson	do		The amount received for these lots is included in that received for lots 1* and 13, square No. 1035.
51	3	1	June 27, 1856	D. G. Mayor	June 27, 1856		The amount received for this lot is included in that received for lots 3 and 4, etc., square No. 1135.
51	4	1	Aug. 30, 1849	Charlotte Davis	Aug. 30, 1849	75.00	
51	5	1	Apr. 25, 1848	Gassaway Waters	Apr. 25, 1848	67.65	

Partial list of lots in the District of Columbia sold by the United States—Continued.

No. of square.	Lot numbers.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
51	7	1	Aug. 1, 1844	Wm. Ferguson	Aug. 1, 1844	$82.18	
51	15	1	Nov. 10, 1852	Timothy & O'Donaghue	Nov. 10, 1852		The amount received for this lot is included in that received for lot 4, square No. 136.
51	16	1	do	Joseph Bryan	do		The amount received for this lot is included in that received for lot 5, square No. 957.
52	Whole square	1	Feb. 28, 1818	Geo. Macdaniel	Feb. 28, 1818	528.33	
54	3, 4, 5, 6, 7, and 8	6	Aug. 27, 1799	Solomon Etting	Aug. 27, 1799	622.20	
54	9	1	July 15, 1800	Pratt & Co. (trustees of M. and N.).	July 15, 1800		The amount received for this lot is included in that received for lot 4 in square No. 1019.
55	1 and 2	2	June 1, 1801	John Templeton	June 1, 1801		The amount received for these lots is included in that received for lot 22 in square No. 166.
55	11, 12, 13, 14, 15, and 16	6	July 31, 1801	do			The amount received for these lots is included in that received for lot 21, etc., in square No. 166.
56	1 and 2	2	June 1, 1801	do			The amount received for these lots is included in that received for lot 22 in square No. 166.
56	12	1	July 31, 1801	do			The amount received for this lot is included in that received for lot 21, etc., in square No. 166.
57	4	1	Sept. 19, 1798	Marsham Waring	June 6, 1797	48.62	
57	5 and 6	2	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	40.00	
57	7	1	Oct. 31, 1828	W. Redin	Oct. 31, 1828	338.16	
58	Whole square	1	July 29, 1815	Robert Henley	July 29, 1815	664.80	
59	1 sold in two parts	1	June 4, 1849	D. M. Wilson (2,460 square feet).	June 14, 1849	72.00	
			Nov. 10, 1852	Mont. Hunt (13,632 square feet).			The amount received for this half lot is included in that received for lots 15 and 16 in square No. 1093.
59	4	1	Jan. 2, 1804	Caldwell (Scott's estate)			The amount received for this lot is included in that received for lot 3 in square No. 83.
60	1	1	June 2, 1804	do			Do.
60	3	1	Aug. 31, 1827	Robert Leekie	Aug. 31, 1827	108.82	
61	7	1	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	20.00	
62	10	1	July 31, 1801	John Templeman	July 31, 1801		The amount received for this lot is included in that received for lots 21, 22, etc., in square No. 166.
63	1	1	Apr. 21, 1794	Isaac Polock	July 12, 1798	172.22	
63	10	1	Sept. 11, 1799	Thomas Corcoran	Jan. 27, 1800	360.00	
67	1, 2, 3, 4, 5, 13, 14, 15, and 19	9	Sept. 29, 1843	Chas. E. Mix	Sept. 29, 1843	238.90	
68	1, 2, 3, 4, 15, 16, 17, 18, 19, and 20	10	Sept. 18, 1843	Thomas Corcoran	Sept. 18, 1843	177.11½	
69	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15	11	Aug. 1, 1845	do	Aug. 1, 1845		The amount received for these lots is included in that received for lot 7, square No. 559.
70	1, 7, 8, 9, 14, 15, 16, 17, 18, 22, and 23.	11	do	do	do		Do.
71	2 and 3	2	Oct. 20, 1802	Chas. Wayman	Oct. 20, 1802	40.00	
72	2, 4, 8, 10, 12, 13, 14, 15, and 18	9	Aug. 1, 1800	Pratt & Co. (trustees of M. and N.).			The amount received for these lots is included in that received for lot 4 in square No. 1019.

73	2 and 24	2	Dec. 31, 1830	Robert Dunlop	Dec. 31, 1830		The amount received for these lots is included in that received for lots 26, 27, etc., square No. 100.
74	5, 6, 9, 10, 12, and 13	6	July 17, 1797	Isaac Polock	July 17, 1797	295.32	
75	6	1	Aug. 30, 1802	David Caldwell	Aug. 30, 1802	201.84	
75	7	1	....do	John Gray, of London	....do	203.27	
75	8	1	....do	David Caldwell	....do	156.00	
75	9	1	Sept. 1, 1797	Rev. John Brackenridge	Sept. 1, 1797		The amount received for this lot is included in that received for lot 12, square No. 119.
75	10	1	Aug. 30, 1802	John Gray, of London	Aug. 30, 1802	136.32	
75	11	1	....do	....do	....do	157.65	
75	12	1	....do	....do	....do	183.08	
75	13 and 14	2	Aug. 30, 1797	Joseph Hodgson	Aug. 30, 1797	485.55	
75	15	1	Aug. 30, 1802	John Cox	Aug. 30, 1802	447.86	
76	1, 2, 3, 8, 9, 10, 11, 12, 19, 20, 21, 22, 28, 29, and 30.	15	....do	John Gray, of London	....do	326.14	
77	4 and 5	2	Nov. 11, 1800	Chas. Wadsworth	Nov. 11, 1800	268.28	
77	8	1	July 31, 1801	John Templeman			The amount received for this lot is included in that received for lots 21, 22, etc., in square No. 166.
77	9 and 10	2	June 2, 1804	Caldwell (trustee of Scott)			The amount received for this lot is included in that received for lot 3 in square No. 83.
77	11, 17, and 18	3	June 1, 1801	John Templeman			The amount received for these lots is included in that received for lots 1, 2, etc., in square No. 141.
77	21 and 22	2	Oct. 4, 1800	James Thompson	Oct. 4, 1800	212.78	
77	23 and 24	2	Sept. 1, 1800	....do	Sept. 1, 1800	146.04	
77	25	1	July 31, 1801	John Templeman			The amount received for this lot is included in that received for lots 21, 22, etc., in square No. 166.
78	1, 2, and 3	3	Dec. 11, 1794	Wm. O'Neale	Feb. 19, 1797	634.44	
78	8	1	Oct. 18, 1791	James Gilchrist	June 27, 1795	277.33	
78	9	1	Feb. 15, 1797	Wm. O'Neale	June 1, 1797	88.89	
78	10	1	June 1, 1797	....do	....do	200.00	
78	11	1	Aug. 28, 1799	Uriah Forrest	Aug. 28, 1799	41.82	
78	12	1	July 31, 1801	John Templeman			Do.
78	19	1	Oct. 18, 1791	James Gilchrist	June 27, 1795	320.00	
78	20 and 21	2	....do	Cabot & Casenave	Mar. 18, 1795	541.33	
78	22	1	....do	James Gilchrist	June 27, 1795	272.00	
78	28	1	July 31, 1801	John Templeman			Do.
78	29	1	Dec. 3, 1799	P. B. Key	Dec. 3, 1799	70.00	
78	30	1	Feb. 21, 1797	Wm. O'Neale			Certificate in fee ordered, proceed not of record.
79	9, 18, and 21	3	Dec. 12, 1822	Nathl. Frye	Dec. 12, 1822	700.00	
79	13, 14, 15, 16, and 17	5	July 31, 1801	John Templeman	July 31, 1801		The amount received for this lot is included in that received for lots 21, 22, etc., in square No. 166.
79	19 and 20	2	Jan. 1, 1816	Thomas Sim	May 12, 1820	735.98	
80	3	1	Sept. 19, 1798	Benj. Stoddert	Sept. 18, 1794	160.00	
80	4	1	June 1, 1801	John Templeman	June 1, 1801		The amount received for this lot is included in that received for lots 1, 2, etc., square No. 141.
80	12	1	July 31, 1801	....do	July 31, 1801		The amount received for this lot is included in that received for lots 21, 22, etc., square No. 166.
80	13 (west side of 13)	1	May 27, 1856	W. B. Todd	May 27, 1856		The amount received for this half lot is included in that received for lots 3, 4, etc., square No. 1135.
80	13 (east side of and west side of 14).		Jan. 5, 1847	B. Forrest	Jan. 5, 1847	192.05	

Partial list of lots in the District of Columbia sold by the United States—Continued.

No. of square.	Lot numbers.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
80	14 (center part of 14)	1	Oct. 14, 1854	P. Hinkle	Oct. 20, 1854	$240.00	
80	14 (east side of 14 and west of 15).		Aug. 19, 1853	Mrs. E. A. Coolidge	Aug. 19, 1853	200.00	
80	15 (east side of 15)		Jan. 31, 1827	John Myers	Jan. 31, 1827	167.35	
81	6, 7 and 8	3	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	60.00	
81	12	1	May 9, 1851	W. B. Todd	May 9, 1851	305.96	
82	The whole square (10,610 square feet).	1	Dec. 31, 1830	John G. McDonald	Dec. 31, 1830	212.20	
83	1	1	Mar. 21, 1794	Dr. H. Schnebely	Feb. 15, 1797	212.22	
83	3	1	June 2, 1804	Caldwell (trustee for Scott)	June 2, 1804	709.70	In this amount is covered the sums paid for lot 2, square 43; lot 4, square 59; lot 1, square 60; lots 9 and 10, square 77.
84	1	1	Sept. 30, 1800	Pratt & Co. (trustees for M. and N.).			The amount received for this lot is included in that received for lot 4, square No. 1019.
84	4	1	Apr. 30, 1828	Thomas Taylor	Apr. 30, 1828	122.91	
85	1, 2, 3, 16, 17, and 18	6	Sept. 23, 1802	John Gray, of London	Sept. 23, 1802	120.18	
85	15	1	Aug. 28, 1799	Solomon Etting	Aug. 28, 1799	110.16	
85	19	1	do	do	do	80.58	
85	20, 21, and 22	3	Sept. 4, 1798	Pratt & Co. (trustees for M. and N.).	Sept. 4, 1798		The amount received for these lots is included in that received for lot 4 in square No. 1019.
86	1 and 5	2	Feb. 19, 1801	Uriah Forrest	Feb. 19, 1801	92.63	
86	2	1	Mar. 19, 1799	John F. Mercer	Mar. 19, 1799		The amount received for this lot is included in that received for lot 1, etc., square No. 433.
86	6	1	Jan. 20, 1801	Daniel Renner	Jan. 20, 1801	270.00	
86	7, 8, 14, 15, 20, and 21	6	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	120.00	
86	22	1	Oct. 9, 1801	do			The amount received for this lot is included in that received for lots 8, 9, and 10 in square No. 166.
87	4 and 7	2	Oct. 20, 1802	do	Oct. 20, 1802	40.00	
88	8 and 9	2	July 21, 1808	Edward Way & Co	July 21, 1808		The amount received for this lot is included in that received for lots 8 and 9 in square No. 89.
88	10 and 11	2	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	40.00	
88	18	1	Oct. 15, 1811	A. G. Way	Oct. 15, 1811	250.00	
E. of 88	10	1	Aug. 15, 1793	Dr. C. Cunningham	Jan. 22, 1798	266.66	
89	8 and 9	2	July 21, 1808	Edward Way & Co	July 21, 1808	600.00	In this amount is covered the sum paid for lots 8 and 9 in square 88.
89	10	1	May 6, 1807	Andrew Way & Co	May 6, 1807	1,000.00	
90	1	1	Aug. 31, 1827	John Douglas	Aug. 31, 1827	90.00	
90	2	1	May 22, 1838	do	May 22, 1838	163.63	
90	3	1	Oct. 30, 1826	do	Oct. 30, 1826	144.31	
91	1, 2, 3, 4, and 5	5	Aug. 1, 1845	Thomas Corcoran	Aug. 1, 1845		The amount received for these lots is included in that received for lot 7 in square No. 599.
92	1, 2, 3, 4, 5, and 6	6	May 31, 1838	Guy Graham	May 31, 1838	179.41	
92	7	1	Sept. 6, 1817	James Baker	Sept. 6, 1817	108.50	

93	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13.	13	Aug. 5, 1839	Henry Upperman	Aug. 15, 1839	1,045.76	
93	14, 15, 16, and 17	4	Dec. 31, 1830	Davidson & Upperman	Dec. 31, 1830	520.55	
94	1, 2, 3. 4, 5, and 6 (the whole square.)	6	Feb. 7, 1839	Thomas Corcoran	Feb. 7, 1839	233.27	
95	1, 2, 3, 4, 5, and 6	6	Oct. 12, 1838	do	Oct. 12, 1838	325.85	
97	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12.	12	July 29, 1815	Robert Henley	July 29, 1815	1,589.41	
99	1, 2, and 11	3	July 30, 1799	Micklin & Griffith	July 30, 1799		The amount received for these lots is included in that received for lots 1, 4, 5, etc., in square No. 634.
99	3, 4, and 5	3	Oct. 20, 1852	Charles Wayman	Oct. 20, 1802	90.00	
100	2, 3, 4, and 8	4	Nov. 10, 1852	Columbus Alexander	Nov. 10, 1852	686.49	
100	9, 10, 14, 15, 16, 17, 20, 21, and 22.	9	Dec. 31, 1830	John Pickerell	Dec. 31, 1830	580.31	
100	26, 27, 32, 33, and 34	5	do	Robert Dunlop	do	519.53	
101	5	1	Aug. 8, 1815	Thos. and J. Moore	Aug. 8, 1815	256.68	
101	6	1	Jan. 31, 1827	Thos. Fellebrown	Jan. 31, 1827	256.70	
101	7	1	Oct. 19, 1791	Thomas Pierce	May 28, 1795	200.00	
101	8	1	May 26, 1826	Robert Earl	May 26, 1826	187.60	
101	9	1	Dec. 13, 1825	John N. Moulder	Dec. 13, 1825	85.92	
101	10, 11, and 12	3	do	Chas. E. Eackel	do	303.50	
101	15	1	Dec. 14, 1816	Jere Hunt	Dec. 14, 1816	175.00	
101	16 and 17	2	July 22, 1797	Samuel Wilson	June 16, 1800	417.35	
101	18	1	Nov. 7, 1797	Wm. Campbell (assignee of W. Forrest).			The amount received for this lot is included in that received for lots 1, 2, etc., in square No. 38.
101	19	1	Oct. 19, 1791	Thos. Peirce	May 28, 1795	269.33	
101	28 and 29	2	Apr. 8, 1816	Peter Hagner	Apr. 8, 1816	500.00	
102	2	1	Sept. 19, 1793	Richard Ross	Sept. 23, 1796	197.33	
102	5	1	Jan. 12, 1852	W. B. Todd	Jan. 12, 1852	735.60	
102	6	1	June 5, 1817	Thos. and Saml. Sandiford	June 10, 1818	754.80	
102	11 and 12	2	Nov. 30, 1826	John Enback	Nov. 30, 1826	717.78	
102	13	1	Aug. 31, 1826	Kennedy and McDuel	Aug. 31, 1826	286?83	
102	14	1	Aug. 30, 1828	Mathias Berzinger	Aug. 30, 1828		The amount received for this lot is included in that received for lot 26 in square No. 127.
102	15 and 19	2	May 10, 1802	W. S. Chandler	May 10, 1802	279.26	
103	3 and 4	2	Sept. 15, 1793	John Hayes	Sept. 18, 1794	466.66	
103	7 and 8	2	Sept. 4, 1798	Pratt & Co. (trustees of M. and N.).	Sept. 4, 1798		The amount received for these lots is included in that received for lot 4 in square No. 1019.
103	12	1	Aug. 18, 1810	Samuel Lewis	Aug. 10, 1810	100.00	
104	1 and 11	2	Sept. —, 1798	W. Forrest and F. Deakins			The amount received for these lots is included in that received for lots 2 and 3, square No. 166.
104	3 and 4	2	Sept. 17, 1800	Henry Gaither			The amount received for these lots is included in that received for lots 22 and 23, square No. 127.
S. of 104	1	1	June 2, 1804	Caldwell (trustee of Scott)			The amount received for these lots is included in that received for lots 15, etc., square No. 172.
105	3	1	Oct. 18, 1791	Francis Cabot	Mar. 18, 1795	296.00	
105	4	1	do	Tobias Lear	Nov. 26, 1791	285.60	
105	7 and 8	2	do	Nicholas Slubey	Mar. 4, 1795	608.00	
105	14	1	do	Jacob Stiener	June 10, 1795	280.00	
105	15, 16, 17, 24, 25, 26, and 27	7	June 10, 1795	John Murdock			The amount received for these lots is included in that received for lots 6, 7, etc., square No. 475.
105	21 and 28	2	Dec. 6, 1799	Jas. M. Lingan	Dec. 6, 1799	182.06	
106	1 and 2	2	May 20, 1801	Michael Nourse	May 20, 1801	465.20	

Partial list of lots in the District of Columbia sold by the United States—Continued.

No. of square.	Lot numbers.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
106	3	1	Feb. 25, 1801	Absalom Joy	Feb. 25, 1801	$372.48	
106	4 and 5	2	Mar. 15, 1808	Wm. Morgan & Co	Mar. 15, 1808	504.64	
106	14	1	Nov. 11, 1811	John Seoussa	Nov. 11, 1811	120.00	
106	15	1	Oct. 11, 1813	do	Oct. 11, 1813	80.00	
106	16 and 17	2	July 31, 1815	do	July 31, 1815	150.00	
106	18	1	June 20, 1815	John Freeman	June 20, 1815	180.00	
106	20	1	April 28, 1852	W. B. Todd	Apr. 28, 1852	310.68	
106	28, 29, and 30	3	Dec. 4, 1811	Toppan Webster	Dec. 4, 1811	536.20	
107	1 and 2	2	Sept. 2, 1802	James Moor	Sept. 2, 1802	80.00	
107	3	1	Nov. 17, 1800	Wm. O'Neal	Nov. 17, 1800	151.00	
107	4	1	Oct. 18, 1791	Jas. Gilchrist	June 27, 1795	269.33	
107	5	1	do	George King	May 19, 1795	280.00	
107	21	1	Aug. 27, 1799	Solomon Etting	Oct. 17, 1799	124.00	
107	22	1	do	do	do	128.00	
107	23	1	do	do	do	100.00	
107	24	1	do	do	do	73.00	
107	25	1	do	do	do	58.00	
107	26	1	do	do	do	67.00	
107	27	1	do	do	do	94.00	
107	28	1	May 19, 1802	Dunlop & Carleton			The amount received for this lot is included in that received for lot 7, etc., in square No. 874.
107	29	1	Aug. 13, 1799	Solomon Etting		101.00	
107	30	1	do	do		66.00	
112	1	1	May 13, 1838	Rhode O'Neal	May 28, 1838	54.07	
116	1, 2, 3, and 24	4	Aug. 30, 1844	Jas. Watters	Aug. 30, 1844	138.72	
116	10	1	Apr. 14, 1809	William Godfrey	Apr. 14, 1809	50.00	
116	11	1	Apr. 6, 1819	Charles Biset	Apr. 6, 1819	100.00	
116	12	1	June 30, 1818	Peter Davis	June 30, 1818	150.00	
116	13	1	July 28, 1843	Charles L. Coltman	July 28, 1843	29.25	
116	14	1	Apr. 30, 1828	Frances Godfrey	Apr. 30, 1828	74.79	
116	15	1	Dec. 14, 1840	do	Dec. 14, 1840	39.32	
116	16	1	May 27, 1856	J. Boulanger			Proceeds for lot 16 is included in total amount of sale, ledger No. 11, p. 194, $7,892.54.
116	17	1	do	A. Buckly			Do.
116	18	1	June 27, 1856	J. D. Clark			Do.
116	19	1	May 27, 1856	J. H. Hendricks			Do.
116	20	1	July 2, 1862	Lewis F. Whitney	July 2, 1862	118.00	
116	21	1	May 29, 1809	Charles Jarboe	May 29, 1809	95.00	
116	22	1	Oct. 6, 1842	Matilda Clark	Oct. 6, 1842	58.84	
116	23	1	Nov. 29, 1843	John Ober	May 29, 1843	59.15	
117	1 and 3	2	July 9, 1847	Charles L. Coltman	July 9, 1847	89.36	
117	2	1	Dec. 31, 1830	Ann Yates	Dec. 31, 1830	91.00	
117	12, 13, 14, 15, 16, 17, and 18	7	do	W. W. Corcoran	do	401.17	

117	26	1	Nov. 10, 1852	Amasiah Underhill	Nov. 10, 1852	207.54	
117	27	1	.....do	T. and P. O'Donague	.....do		The amount received for this lot is included in that received for lot 4, square No. 136.
117	28 and 29	2	.....do	James Caden	.....do		The amount received for this lot is included in that received for lot 16, etc., square No. 1007.
117	30	1	Jan. 26, 1852	Wm. Reading	Jan. 26, 1852	107.32	
118	1, 2, 13, and part of 3	3½	Oct. 6, 1797	U. Forrest and W. Deakins	Oct. 6, 1797	264.71	
118	½ of 3	½	Aug. 30, 1802	John McElwee	Aug. 30, 1802	245.51½	
118	4 and 5	2	Sept. 1, 1800	Uriah Forrest	Sept. 1, 1800	156.68	
118	9	1	Feb. 18, 1802	John Templeman	Feb. 18, 1802	183.00	
118	10	1	Apr. 3, 1802	Leonard Harbaugh	Apr. 3, 1802	184.20	
118	11	1	July 31, 1801	John Templeman	July 31, 1801		The amount received for this lot is included in that received for lots 21, 22, etc., in square No. 166.
118	12	1	Aug. 2, 1802	.....do	Aug. 2, 1802	117.00	
119	4	1	Aug. 30, 1802	John McElwee	Aug. 30, 1802	192.08	
119	5	1	.....do	D. Caldwell	.....do	172.95	
119	6	1	.....do	John Templeman	.....do	183.62½	
119	11	1	May 7, 1800	James Hoban	Sept. 30, 1800	285.60	
119	12	1	Sept. 1, 1797	John Breckenridge	Sept. 1, 1797	112.80	In this amount is included sum paid for lot 9, square No. 75.
119	13	1	Aug. 28, 1797	Dr. Fred. May and S. Ellicott	Aug. 28, 1797	170.00	
120	6, 7, and 8	3	June 2, 1804	Caldwell, trustee of Scott			The amount received for these lots is included in that received for lots 15, etc., in square No. 172.
121	4	1	Dec. 29, 1801	Benj. Stoddert			The amount received for this lot is included in that received for lot 1, square No. 143.
121	6 and 7	2	Apr. 30, 1828	Nathan Towson	Apr. 30, 1828	1,038.00	
122	1	1	Dec. 17, 1800	W. S. Chandler	Dec. 17, 1800	552.16	
122	2 and 3	2	Feb. 17, 1800	Benj. Stoddert	Feb. 17, 1800		The amount received for these lots is included in that received for lots 19 and 22, square No. 43.
122	9	1	Nov. 7, 1799	John Kearney	Oct. 25, 1800	460.00	
126	4 and 5	2	Oct. 27, 1798	Edward Plowden	Oct. 27, 1798		The amount received for these lots is included in that received for lots 12 and 13, square No. 702.
126	15, 16, 17, 18, and 19	5	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	100.00	
126	24	1	Aug. 31, 1802	Wm. Doughty	Aug. 31, 1802	70.00	
126	25	1	Sept. 4, 1802	Walter Hellen	Sept. 4, 1802	85.00	
126	26	1	.....do	.....do	.....do	75.00	
126	27	1	Oct. 20, 1802	B. Tubbs	Oct. 20, 1802	70.00	
126	28	1	Oct. 17, 1791	Peter Casanave	Jan. 1, 1795	269.33	
126	29	1	.....do	Thos. L. Shippen	Jan. 27, 1795	307.33	
126	30	1	Apr. 30, 1827	Wm. Williamson	Apr. 30, 1827	142.35	
126	31	1	Oct. 17, 1791	Henry Carroll	June 27, 1795	536.00	
127	7, 8, 20, and 21	4	Sept. 30, 1799	Wm. Barksdale			The amount received for these lots is included in that received for lots 8 and 9, square No. 702.
127	14, 15, and 16	3	Oct. 1, 1799	Samuel Smith			The amount received for these lots is included in that received for lots 3 and 10, square No. 142.
127	17	1	Aug. 14, 1800	Robert Craig	Nov. 17, 1800	110.40	
127	18	1	Sept. 2, 1796	Charles Cook	Feb. 12, 1799	337.33	
127	19	1	Apr. 12, 1812	Charles Vinson	Apr. 10, 1812	200.00	
127	22 and 23	2	Sept. 17, 1800	Henry Gaither	Nov. 24, 1800	1,920.06	In this amount is covered the sum paid for lots 3 and 4, square No. 104.
127	26	1	Apr. 30, 1828	Mathew Bensinger	Apr. 30, 1828	703.12	
127	27	1	Mar. 12, 1821	Mayor of Washington, D. C.	Mar. 12, 1821	100.00	

Partial list of lots in the District of Columbia sold by the United States—Continued.

No. of square.	Lot numbers.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
127	28	1	Oct. 9, 1791	Thomas S. Lee	June 19, 1799	$160.00	
127	29	1	do	do	do	165.33	
128	3, 4, 5, 6, 7, and 8	6	Jan. 23, 1797	Dunlop & Carleton			The amount received for these lots is included in that received for lot 4 in square No. 1024.
129	2	1	Mar. 2, 1848	Samuel Devaughn	Mar. 2, 1848	156.00	
131	1, 2, 3, 4, 5, 6, 7, and 9	8	Jan. 2, 1847	Chester A. Colt	Jan. 2, 1847	152.72	
131	8	1	May 1, 1829	John G. E. Recard	May 1, 1829	158.24	
134	1 to 15 both inclusive	15	May 28, 1838	Rhoda O'Neale	May 28, 1838	433.35	
135	1, 2, and 3	3	do	do	do	179.59	
136	4	1	Nov. 10, 1852	Timothy & Donayhue	Nov. 10, 1852	765.28	In this amount is covered the sums paid for lot 15, square 51, and lot 27 in square No. 117.
136	5 and 6	2	do	Robert S. Patterson	do		The amount received for these lots is included in that received for lots 12, 13, etc., in square No. 1035.
137	1, 2, 3, and 4	4	July 9, 1847	John P. Heiss	July 9, 1847	418.79	
140	5 and 8	2	Oct. 14, 1848	James Libbey	Oct. 14, 1848	82.50	
140	6, 7, 9, 22, 23, 24, 25, and 26	8	Aug. 11, 1851	Wm. Reading	Aug. 11, 1851	737.04	
140	10, 11, 12, 27, 28, 29, and 30	7	Feb. 25, 1852	do	Feb. 25, 1852	909.33	
141	1, 2, 3, 9, 10, 11,* 12, 13, and 19	9	June 1, 1801	John Templeman	June 1, 1801		The amount received for these lots is included in that received for lot 22 in square No. 166.
141	20	1	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	20.00	
142	3 and 10	2	Oct. 1, 1799	Samuel Smith	Nov. 4, 1800	1,892.06	In this amount is covered the sum paid for lots 14, 15, and 16 in square No. 127.
142	4	1	June 1, 1801	Benj. Stoddert	June 1, 1801	148.91	
142	7	1	Dec. 7, 1801	John Murdock	Dec. 7, 1801		The amount received for this lot is included in that received for lots 6, 7, and 14 in square No. 457.
142	11	1	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	200.00	
142	12	1	Oct. 4, 1800	Arnold Elsey	Oct. 4, 1800	60.00	
142	13	1	Oct. 28, 1800	do	Oct. 28, 1800	72.00	
142	14	1	Apr. 3, 1802	Benj. Stoddert			The amount received for this lot is included in that received for lot 10 in square No. 847.
143	1	1	Jan. 29, 1802	do	Jan. 29, 1802	230.42	In this amount is covered the sum paid for lot 4 in square No. 121.
143	2	1	Oct. 20, 1802	do	Oct. 20, 1802	20.00	
143	3 and 4	2	July 20, 1802	do			The amount received for these lots is included in that received for lots 2, 3, 4, etc., in square No. 882.
143	10	1	June 21, 1796	Richard Gridley	Feb. 22, 1797	260.00	
143	12	1	Apr. 14, 1796	Robert King, jr	Dec. 18, 1800	549.15	
143	½ of 18	½	Oct. 20, 1802	Benj. Stoddert	Oct. 20, 1802	20.00	
143	19 and 20	2	Feb. 17, 1801	do	Feb. 17, 1801	496.00	In this amount is covered the sum paid for lot 10 in square No. 40, and lots 2 and 8 in square No. 122.
144	6	1	Oct. 20, 1802	do	Oct. 20, 1802	20.00	
145	1, 2, 7, and 8	4	Sept. 4, 1798	Pratt & Co. (trustees of M. and N.)			The amount received for these lots is included in that received for lot 4, square No. 1019.
146	1, 2, and 3	3	do	do			Do.

147	4	1	do	do			The amount received for this lot is included in that received for lot 4, square No. 1019.
147	2	1	Apr. 15, 1807	James Hoban			The amount received for this lot is included in that received for lot 2, square No. 148.
148	2	1	do	do		600.00	In this amount is covered the sums paid for lot 2, square No. 147.
150	1, 2, 3, 4, 5, 6, 9, 10, 11, 12, and 13.	11	Aug. 1, 1845	Thomas Corcoran			The amount received for these lots is included in that received for lots 7 and 9 in square No. 599.
152	1, 2, 3, 4, 15, 16, 17, 18, 19, 20, and 21.	11	Sept. 7, 1843	Michael Burback	Sept. 7, 1843	417.08½	
152	5, 6, 7, 8, 9, 10, 11, 12, 13, and 14.	10	Aug. 1, 1845	Thomas Corcoran			The amount received for these lots is included in that received for lots 7 and 9, square No. 599.
153	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, and 16.	15	Sept. 18, 1843	do	Sept. 18, 1843	386.25	
154	10 and 11	2	Apr. 26, 1854	N. Callan	Apr. 26, 1854	438.65	
155	1 to 22, both inclusive	22	June 13, 1844	Thomas Corcoran	June 13, 1844	699.08	
158	1, 20, 21, and 22	4	Aug. 17, 1844	Chas. L. Coltman	Aug. 17, 1844	241.01	
158	2	1	Sept. 3, 1802	Wm. Simmons	Sept. 3, 1802	35.00	
158	3	1	do	do	do	40.00	
158	4, 5, and 6	3	July 28, 1843	Chas. L. Coltman	July 28, 1843	184.27	
158	7, 8, 9, and 10	4	Sept. 3, 1802	Wm. Doughty	Sept. 3, 1802	120.00	
158	12 and 13	2	do	Wm. Simmons	do	60.00	
158	11	1	Aug. 13, 1800	Wm. O'Nealle	Nov. 7, 1800	231.00	
158	14, 15, 16, and 17	4	July 7, 1851	W. W. Corcoran	July 7, 1851	621.15	
159	1, 2, 3, 4, 5, 13, 14, 15, and 16	9	Dec. 29, 1851	W. E. Howard	Dec. 29, 1851	1,128.75	
160	1 and 4	2	Jan. 6, 1807	Nicholas King	Jan. 6, 1807	120.00	
160	2	1	Jan. 1, 1807	do	Jan. 1, 1807	65.00	
160	3	1	Aug. 1, 1806	do	Aug. 1, 1806	65.00	
161	1	1	Oct. 21, 1802	Wm. Waters	Oct. 21, 1802	87.00	
161	3	1	June 11, 1801	Joseph Burrows	June 11, 1801	137.14	
161	4	1	Oct. 22, 1802	J. Moore	Oct. 22, 1802	73.00	
161	5	1	do	Nathl. Cutter	do	72.00	
161	6	1	do	Evan Evans	do	56.00	
161	7	1	Oct. 21, 1802	Walter Hellen	Oct. 21, 1802	41.00	
162	1 to 21, both inclusive	21	Apr. 19, 1851	Nathl. Carusi	Apr. 19, 1851	5,089.00	
163	5, 6, 7, 12, 13, and 14	6	Sept. 4, 1798	Pratt & Co. (trustees of M. and N.).			The amount received for these lots is included in that received for lot 4, square No. 1019.
164	1, 3, 4, 5, 6, 7, 8, and 9	8	Sept. 23, 1802	Wm. Glover, of London	Sept. 23, 1802	291.17½	
164	2	1	Apr. 6, 1799	Jonathan Jackson	Apr. 6, 1799	145.75	
166	2 and 3	2	Sept. 14, 1798	U. Forrest and F. Deakins	Sept. 14, 1798	496.98	
166	8, 9, and 10	3	Oct. 9, 1801	Benj. Stoddert	Oct. 9, 1801	258.42	In this amount is covered the sum paid for lot 22, square No. 86.
166	14, 15, and 16	3	Dec. 4, 1801	John Murdock	Dec. 4, 1801	270.18	
166	20	1	Sept. 19, 1793	Benj. Stoddert	Sept. 19, 1793	160.00	
166	21, 22, 23, and 24	4	July 31, 1801	John Templeman	July 31, 1801	3,000.00	In this amount is covered the sum paid for lots 1 and 2, square 42; 11, 12, 13, 14, 15, and 16, square 55; 12, square 56; 10, square 62; 8 and 25, square 77; 12 and 23, square 78; 13, 14, 15, 16, and 17, square 79; 12, square 80; and lot 11, square No. 118.

*Lot No. 11 was sold and value received at date given. Part of same was donated for public-school purposes by act of Congress (U. S. Stats., vol. 17, p. 221) in 1872.

Partial list of lots in the District of Columbia sold by the United States—Continued.

No. of square.	Lot numbers.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
168	4	1	May 1, 1798	L. and C. Powell	May 1, 1878	$71.00	
168	8	1	June 21, 1799	Jas. Nourse	June 21, 1799	74.68	
168	15	1	Apr. 11, 1801	Benj. Stoddert	Apr. 11, 1801	108.60	
168	16	1	Nov. 4, 1801	do	Nov. 4, 1801	121.26	
168	17	1	Sept. 25, 1800	John Swann	Sept. 25, 1800	101.60	
168	18	1	Apr. 8, 1801	Owen Roberts	Apr. 8, 1801	112.15	
168	21	1	Dec. 28, 1796	U. Forrest (assignee of M. and N.).			"Certificate in fee granted," as per Proceedings, vol. 3, p. 55. Proceeds for lot not found on record.
169	6, 7, 8, 9, and 10	5	Aug. 28, 1799	Solomon Etting	Aug. 28, 1799	2,188.11	
169	14	1	Apr. 19, 1800	Calder & Coltman			The amount received for this lot is included in that received for lot 2 in square No. 292.
169	15	1	do	George Andrews	Nov. 19, 1801	346.07	
169	16	1	June 24, 1800	Wm. McCreery	June 24, 1800	161.50	
169	19 and 20	2	June 26, 1794	Philip Gladsden	Nov. 9, 1796	800.00	
169	21	1	July 29, 1796	James Brown	Jan. 29, 1799	428.85	
170	3 and 4	2	June 2, 1804	Caldwell (trustee of Scott)			The amount received for these lots is included in that received for lots 15, etc., square No. 172.
170	7 and 8	2	Nov. 21, 1796	Gustavus Scott			"Certificate in fee granted," as per Proceedings, vol. 3, p. 28. Proceeds for lot not found on records.
170	11	1	May 2, 1801	Benj. Stoddert	May 2, 1801	148.75	
170	12	1	Sept. 10, 1800	Cathrine Lovely (assignee of Scott).	Sept. 10, 1800	148.75	
170	15 and 16	2	Jan. 31, 1797	R. Peter (assignee of M. and N.)			"Certificate in fee granted" for these lots, as per Proceedings, vol. 3, p. 94. Proceeds for same not found on records.
172	1	1	Sept. 17, 1793	D. Crawford (assignee of Contee).	July 5, 1797	128.91	
172	2	1	Sept. 4, 1802	Chas. Wayman	Sept. 4, 1802	40.00	
172	3 and 4	2	do	Benj. Stoddert	do	100.00	
172	5 and 6	2	do	Wm. Simmons	do	100.00	
172	7 and 8	2	do	Benj. Stoddert	do	100.00	
172	9	1	do	Chas. Wayman	do	40.00	
172	10 and 11	2	Sept. 3, 1802	Benj. Stoddert	Sept. 3, 1802	100.00	
172	12	1	do	Wm. Simmons	do	70.00	
172	13	1	do	do	do	75.00	
172	14	1	do	do	do	55.00	
172	15, 22, and 23	3	do	Caldwell (trustee of Scott)	Nov. 9, 1801	1,582.04	In this amount is covered sums paid for lot 1, square south of 141; lots 6, 7, and 8, square 120; lots 3 and 4, square 170.
172	16	1	do	Wm. Simmons	Sept. 3, 1802	55.00	
172	17	1	do	Benj. Stoddert	do	70.00	
172	18	1	do	do	do	85.00	
172	19	1	do	Wm. Simmons	do	95.00	
172	20	1	do	do	do	85.00	

172	21	1	do	Dr. John Bullus	do	90.00	
172	24	1	Aug. 31, 1802	Joseph Burrows	Aug. 31, 1802	75.00	
172	25	1	Sept. 3, 1802	Dr. John Bullus	Sept. 3, 1802	100.00	
172	26	1	do	do	do	80.00	
172	27	1	do	do	do	100.00	
172	28	1	do	John Willis	do	60.00	
175	1 to 16, both inclusive	16	Aug. 1, 1845	Thomas Corcoran			The amount received for these lots is included in that received for lot 7, square No. 599.
177	4, 5, 6, 7, 8, and 9	6	do	do			Do.
N. of 177	1, 2, and 3	3	do	do			Do.
178	1, 2, 3, 4, 5, 6, 7, 8, 19, and 20	10	June 3, 1843	do	June 3, 1843	215.38	
179	1	1	June 13, 1836	Thomas Ruggles	June 13, 1836	100.00	
179	2, 3, 19, and 20	4	Aug. 15, 1837	do	Aug. 5, 1837	163.36½	
179	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18.	15	May 31, 1838	do	May 31, 1838	359.58	
181	1 to 30, both inclusive	30	Oct. 31, 1842	Chas. A. Wickliffe	Oct. 31, 1842	646.34	
S. of 181	1	1	June 29, 1841	Catharine Lancaster	June 29, 1841	23.83	
N. of 182	1	1	July 17, 1841	Thos. B. Spriggs	July 17, 1841	59.68	
183	5, 6, 7, 8, 9, 10, 11, and 12	8	July 9, 1847	John P. Heiss	July 9, 1847	567.02	
183	14 and 15	2	Mar. 16, 1801	Samuel Davidson	Mar. 16, 1801	17.58	The balance of the value of these lots, though not stated, was allowed Davidson for improvements.
183	17, 21, 22, 23, 24, 25, 26, 27, and 28.	9	June 20, 1846	W. W. Corcoran	June 20, 1846	606.96	
184	1	1	Mar. 19, 1802	Dunlop & Carleton			The amount received for this lot is included in that received for lots 7, etc., square No. 874.
184	4, 5, 15, 16, 20, and 21	6	June 1, 1801	Benj. Stoddert			The amount received for these lots is included in that received for lot 11, square No. 799.
184	10, 11, and 12	3	Aug. 27, 1799	Solomon Etting			The amount received for these lots is included in that received for lot 29, square No. 1048.
185	1, 2, 11, 13, and 21	5	Sept. 2, 1802	Walter Hellen	Sept. 2, 1802	345.00	
185	5, 6, 12, 16, and 17	5	do	Wm. Simmons	do	380.00	
185	10	½	do	Lewis & Murkland	do	70.00	South half of lot 10.
S of 188	1	1	Aug. 1, 1845	Thomas Corcoran			The amount received for this lot is included in that received for lot 7, square No. 599.
189	1, 2, 3, 4, 5, 6, 7, 8, 9, and 10	10	do	do			The amount received for these lots is included in that received for lot 7, square No. 599.
190	1 to 20, both inclusive	20	do	do			Do.
192	9, 10, 11, 12, 13, 14, 15, 16, 17, and 18.	10	May 12, 1838	Joshua Pierce	May 12, 1838	212.51	
194	4, 5, 6, 7, 8, 9, 10, 11, 12, and 13	10	Apr. 14, 1841	James Miller	Apr. 14	424.68	
196	3, 5, 6, 10, 11, 12, 13, and 17	8	July 30, 1798	Micklin & Griffith			The amount received for these lots is included in that received for lots 1, 4, etc., in square No. 643.
196	4, 8, 9, 14, 15, and 16	6	Oct. 21, 1802	Chas. Wayman	Oct. 21, 1802	119.00	
197	1 and 2	2	June 30, 1831	Alexr. Borland	June 30, 1801	263.25	
197	3	1	July 7, 1826	do	July 7, 1826	216.00	
197	4	1	Dec. 11, 1832	do	Dec. 11, 1832	251.00	
197	31	1	Apr. 4, 1844	do	Apr. 4, 1844	166.00	
197	32	1	Oct. 24, 1834	do	Oct. 24, 1834	144.99	
198	1, 10, 11, 12, and 21	5	Aug. 27, 1799	Solomon Etting			The amount received for these lots is included in that received for lots 29 and 30 in square No. 1042.
198	2	1	Mar. 19, 1802	Dunlop & Carleton			The amount received for this lot is included in that received for lot 7, etc., square No. 874.

Partial list of lots in the District of Columbia sold by the United States—Continued.

No. of square.	Lot numbers.	Number of lots sold.	Date of sale.	Name of purchaser.	Received.		Remarks.
					Date.	Amount.	
198	5, 6, and 20	3	June 1, 1801	Abraham Bradley	June 1, 1801	$444.19	
198	15 and 16	2	Sept. 23, 1802	Wm. Glover, of London	Sept. 23, 1802	73.27	
199	1, 2, 5, 6, 10, 11, 12, 15, 16, and 21	10	June 1, 1801	Benj. Stoddert			The amount received for these lots is included in that received for lot 11, square No. 799.
200	2	1	Oct. 20, 1792	John Templeman	Oct. 22, 1792	266.66	
200	3	1	Oct. 22, 1792	Thomas Ketland	June 25, 1798	266.66	
200	6	1	Mar. 18, 1793	Saml. Graffen (assignee of Howel)	Mar. 18, 1793	222.22	
200	8, 9, 10, and 11	4	Dec. 24, 1794	Walter Stewart	May 18, 1796	1,066.64	
200	12	1	July 29, 1815	Robert Henley	July 29, 1815	327.70	
200	15	1	Mar. 12, 1795	Maj. Jno. Davidson	Apr. 16, 1799	2,000.00	House and lot.
200	16 and 17	2	Dec. 5, 1792	J. Hoban and P. Purcell	Jan. 13, 1801	533.32	
204	1, 2, 3, 4, 15, 16, 17, 18, 19, and 20	10	Dec. 22, 1841	Wm. Murphy	Dec. 22, 1841	227.81	
204	5, 6, 7, 8, 9, 10, 11, 12, 13, and 14	10	Aug. 1, 1845	Thomas Corcoran			The amount received for these lots is included in that received for lot 7, square No. 599.
205	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16	12	do	do			Do.
206	1 and 2	2	May 12, 1838	Joshua Pierce	May 12, 1838	45.65	
207	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16	12	Oct. 3, 1838	do	Oct. 3, 1838	358.35	
211	5	1	Dec. 31, 1832	Charles Brown	Dec. 31, 1832	99.20	
211	6	1	Dec. 31, 1830	do	Dec. 31, 1830	65.27	
212	1, 2, and 16	3	May 9, 1810	John Graham	Apr. 28, 1813	659.46	
212	11 and 12	2	Apr. 28, 1819	do	Apr. 28, 1819	223.87	
212	13, 14, and 15	3	May 9, 1810	do	July 29, 1817	273.60	
218	1 and 22	2	Feb. 14, 1798	John Emery	Feb. 14, 1878	130.00	
218	2, 20, and 21	3	Aug. 27, 1799	Solomon Etting	Dec. 9, 1800	336.00	
218	3, 4, 14, and 15	4	May 19, 1801	Benj. Stoddert	May 19, 1800	572.00	
218	5	1	Jan. 19, 1798	Richard Gridley	Jan. 19, 1798	133.00	
218	6, 7, and 8	3	May 2, 1799	Lewis Winder	May 21, 1799	227.86	
218	9, 10, 11, 12, and 13	5	Aug. 23, 1799	James McHenry	Aug. 23, 1799	431.00	
218	16	1	Oct. 18, 1797	Edward Carter	Oct. 18, 1797	114.00	
218	17	1	do	do	do	74.00	
218	18	1	do	do	do	59.00	
218	19	1	do	do	do	70.00	
219	1, 2, 7, 8, 9, 12, and 13	7	Sept. 11, 1799	Pickett, Pollard & Johnson	Dec. 10, 1801	1,926.60	
219	5	1	Sept. 18, 1798	Colonel Mercer	Sept. 18, 1798	65.38	
221	1 to 24, both inclusive	24	Oct. 11, 1792	Samuel Davidson	Jan. 30, 1794	540.00	
222	1	1	Aug. 31, 1802	John McElwee	Aug. 31, 1802	199.97	
222	15	1	do	do	do	156.12	
222	2 and 3	2	Nov. 3, 1797	Pierce Purcell	Jan. 13, 1798	420.00	
222	9	1	Aug. 31, 1802	Joseph Taylor	Aug. 31, 1802	139.55	
222	10	1	Feb. 3, 1798	Robert Sutton	Feb. 3, 1798	150.00	
222	11	1	Aug. 31, 1802	Robert Alexander	Aug. 31, 1802	100.00	

222	12	1	do	Wm. Doughty	do	105 00	
222	1 and 7	2	Jan. 23, 1797	Dunlop & Carleton			The amount received for these lots is included in that received for lot 4 in square No. 1024.
224	1	1	Oct. 8, 1792	Thos. J. Beatty	Mar. 12, 1796	301.33	
224	4	1	do	Hoban & Purnell	Jan. 13, 1801	290.33	
224	5	1	do	Wm. Cockell	Aug. 15, 1793	280.00	
224	8	1	do	David Burns	June 27, 1796	533.33	This lot was claimed by W. W. Corcoran and was conveyed to him on April 14, 1859.
224	9	1	do	do	do	400.00	
224	12	1	do	Wm. Agustine Washington	Oct. 20, 1795	333.33	
224	13	1	do	do	do	266.66	
224	16	1	do	Thos. I. Beatty	Mar. 17, 1796	313.33	
225	1, 2, 3, and 16	4	Dec. 31, 1794	Walter Stewart, Philadelphia.	Oct. 28, 1802	1,066.66	
225	4 and 5	2	June 22, 1797	James Hoban	June 22, 1797	595.00	
225	6	1	Oct. 22, 1792	Peter Gilman	Jan. 28, 1797	266.66	
225	7	1	do	Samuel Blodget, jr	Dec. 31, 1795	266.66	
225	8	1	do	Benjamin Blodget	Jan. 28, 1797	266.66	
225	9	1	Dec. 31, 1795	Samuel Blodget, jr	Dec. 31, 1795	266.66	
225	10	1	Oct. 13, 1792	Pat. McD. Row	Aug. 19, 1802	200.00	
225	11	1	Oct. 22, 1792	Thomas Metcalf	Sept. 29, 1795	210.66	
225	12, 13, 14, and 15	4	July 20, 1797	Thos. Law (assignee of M. and N.).			The amount received for these lots is included in that received for lots 2, etc., in square No. 771.
227	1, 4, 5, 8, 9, 12, 13, and 16	8	Sept. 14, 1816	Richard Cutts			The amount received for these lots is included in that received for lots 2, etc., in square No. 23.
228	1	1	July 20, 1797	Thos. Law (assignee of M. and N.).			The amount received for this lot is included in that received for lots 2, etc., in square No. 771.
229	2, 3, and 4	3	do	do			Do.
230	2, 4, 6, 8, 10, and 12	6	Sept. 14, 1816	Richard Cutts	Mar. 3, 1817	8,235.66	In this amount is covered the sum paid for lots 1, 4, 5, 8, 9, 12, 13, and 16, square No. 277.
231	11, 12, and 13	3	Sept. 3, 1799	Daniel Carroll	Sept. 11, 1817	422.00	
231	19 and 20	2	Dec. 28, 1796	Wm. Duncanson			The amount received for these lots is included in that received for lot 8 in square No. 954.
231	21 and 22	2	Aug. 27, 1799	Solomon Etting	Aug. 27, 1799	145.00	
236	1, 2, 3, 4, 15, 16, 17, 18, 19, and 20	10	May 17, 1852	W. W. Corcoran	May 17, 1852	799.66	
236	5, 6, 7, 8, 9, 10, 11, 12, 13, and 14	10	May 20, 1851	James B. Donelan	May 20, 1851	200.00	
237	1 to 24, both inclusive	24	Dec. 22, 1841	Albert Heidemiller	Dec. 22, 1841	529.90	
238	1, 17, 18, 19, 20, 21, 22, 23, and 24	9	Sept. 18, 1843	Thomas Corcoran	Sept. 18, 1843	197.63½	
245	2	1	June 30, 1831	L. Richardson	June 30, 1831	145.80	
245	3	1	Dec. 1, 1826	do	Dec. 1, 1826	163.96	
245	4	1	July 21, 1825	Chas. L. Coltman	July 21, 1825	103.67	
245	5 and 7	2	Dec. 31, 1827	do	Dec. 31, 1827	647.13	
245	6	1	Jan. 31, 1827	do	Jan. 31, 1827	122.44	
245	15	1	Dec. 31, 1830	Luke Richardson	Dec. 31, 1830	119.62	
245	16	1	May 3, 1839	Chas. L. Coltman	May 3, 1839	74.40	
		1,522				152,712.10	

55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 49.

TIMBER LANDS ON CHIPPEWA INDIAN RESERVATION IN MINNESOTA.

JANUARY 6, 1899.—Ordered to be printed.

Mr. PLATT, of Connecticut, presented the following

MEMORIAL FROM THE INDIAN RIGHTS ASSOCIATION RELATING TO TIMBER LANDS ON THE CHIPPEWA INDIAN RESERVATION IN MINNESOTA.

The honorable United States Senate:

We solicit your interest in behalf of the Chippewa Indians of Minnesota looking to a change of existing law for which the Indians have appealed.

In the year 1889 the different bands of Chippewa Indians in the State of Minnesota signed agreements ceding their surplus lands in that State to the United States, in conformity with the act of Congress approved January 14, 1889.

Said act provides that the value of all "standing or growing" pine on said ceded lands shall be determined within a "reasonable time" by competent estimators, and the said lands sold at not less than the estimate, computed at not less than $3 per 1,000 feet "board measure of the pine timber thereon."

Since the year 1889 the estimating of these "pine lands" has continued, several hundred thousand dollars of Indian funds have been expended thus far in making these estimates, and the continuance of the Chippewa Commission at ridiculously high salaries in violation of the spirit and letter of the law that the work should be completed in a "reasonable time."

The defects of the law are glaring. It is a well-known fact that probably 50 per cent of the timber on pine lands can not be counted as strictly "growing pine," a large per cent being slightly injured by reason of fire; and much that has been burned at the roots, yet blown down, as good as that standing, can not be considered strictly "green pine," and would not, therefore, be included in the estimate now being made under the law.

The law provides that the land shall be sold at not less than the estimated amount of growing pine thereon, computed at not less than $3 per 1,000 feet, board measure, so that the land will practically go free to the purchaser of the pine timber *growing* thereon. There are approximately 2,500,000 acres of the pine lands to be sold under this system of estimating that should net the Indians at least $1 per acre in addition to the value of the timber thereon.

Many tracts of this pine timber are located conveniently for transportation to market and would command $5 or $6 per 1,000 feet,

according to quality and location, yet all may be sold at $3 per 1,000, standing estimate. The history of such sales is that no advance of stipulated price under the law is realized.

As an illustration of the large per cent of timber that may be excluded from the estimate of "growing pine" now being made we cite the applications for logging 100,000,000 feet made to the superintendent of logging the present season on the Chippewa Reservations, under the plan first adopted for the logging operations during this winter, which was that if, upon investigation, it was estimated that two-thirds of all the timber on a certain tract was "dead and down" all the timber on that tract should be cut under the "dead and down" law. Within a very short time applications for the logging of 100,000,000 feet were filed with the superintendent. These estimates were made by officers now in the field, so that we may consider this a fair sample of the results that will follow if the "growing pine" is sold on the estimates now being made. Two-thirds of the timber will be lost to the Indians, in add tio to the value of the lands.

Aside from all other defects of the present law is that of guesswork. Why *estimate* the a nount of timber at all. Instead of taking the risk of error and incompetency of estimators, added to that of fraudulent estimation, as proven in the past in this work (see Report of Inspector J. George Wright, Senate Doc. No. 85, Fifty-fifth Congress, first session), a much more business-like method will be to measure the lumber after being cut and banked, known as "Bank scale," with provisions for banking all merchantable logs on the tracts logged over, so that no loss to the tribe would result by reason of the dead and down timber not being included in the estimate, as under the plan now pursued.

On a portion of these pine lands sawmills could be erected with profit for manufacture of lumber, while where this was not advisable provision could be made for the sale of the logs from the bank. In both cases Indian labor could be utilized to the fullest extent possible.

STANDING OR FALLEN DEAD TIMBER.

An act approved June 7, 1897, provides that the Secretary of the Interior may authorize the cutting of "dead timber, standing or fallen," on the Chippewa Reservation in Minnesota.

Under this authority upward of 55,000,000 feet were logged during the winter of 1897 and 1898, 15 per cent, or an average of 75 cents per 1,000 feet, being charged the loggers and credited to the tribal funds. Individual Indians under this law made contracts with lumbermen to log on certain tracts of land. The usual plan was for the lumberman to agree to pay a certain price (about $5 per 1,000 feet) for the logs on the bank. All manner of fraud was practiced by the lumbermen. The contract usually carried with it an understanding that the supplies for running the logging camp were to be purchased of certain designated firms, thus affording opportunity for excessive charges for these supplies, and the evidence shows the opportunity was well improved.

The full-blood Indians are not so aggressive as the mixed bloods and squaw men and failed to secure their share of contracts to log, the old and infirm naturally being shut out from these contracts altogether. Four-fifths of last season's logging at Leech Lake Reservation was done in the name of White Earth mixed bloods or squaw men in the name of their wives, as will be seen, to the almost total exclusion of the Leech Lake or Pillager Indians; and of the output of over 21,000,000 feet logged at Leech Lake last season, E. L. Warren, a one-sixteenth Indian,

a resident of White Earth Reservation and a deputy United States marshal, was interested in over three-fifths of the amount. His power over these Indians in his position as deputy United States marshal has evidently been used in his own interest financially. (See Exhibit A.)

Under this system of cutting "standing or fallen" timber during last season, possibly 20 per cent of the cut was allowed of *green pine* on the theory that it was necessary for *boomsticks*, and of course roads had to be cut through the timber, routes being necessary usually through the best portions of *green pine*.

We submit, however, that it is preferable, if the logging of "dead and fallen" timber is to be continued as at present, that the green pine as well as the dead and fallen should be logged, since if only the latter is logged the tops and limbs afford such increased liability of destruction from fire that the remnant of green pine left in the woods will be lost.

The Indian, not being so adept at trickery as his white neighbor, correspondingly suffers. The affidavit of John Bonga (attached hereto, marked Exhibit B) shows that he secured a contract to log with the Brainerd Lumber Company; that the logging operations proceeded, and that he went to the logging camp several times to make suggestions, turned his own logging outfit into the camp, etc., and believed the camp was his and under his control; that the lumbermen paid no attention whatever to his suggestions regarding the work of the camp, bought the supplies, paid the bills charged against the camp, shipped the lumber and pocketed the proceeds, and now the Indian logger complains that he never received anything of value from his logging contract excepting six meals, and that he understands he owes $1,500 as a result of the season's logging, and, as he deftly figures it, the six meals cost him at the rate of $250 per meal. Exhibit C shows that this Indian had given a power of attorney to the chief woodsman of the lumber company to manage the business for him, the woodsman making affidavit to that effect.

The facts in this case also show that the chief sawyer for the lumber company was the scaler or measurer of the logs, the lumberman having the whole management of the camp under his control.

Many other instances could be given to show the weaknesses of this system of cutting "standing or fallen" timber.

The agreement to sell the pine timber at not less than $3 per 1,000 feet was made by and between the United States and the Indian tribes, and *can not honorably* be *abrogated* by an act of Congress to which the Indians have not consented. The average price of 75 cents per 1,000 feet realized by the Chippewa tribe last season being only one-fourth of the least price allowed by law, was therefore in *violation* of *treaty obligations*.

The investigation conducted by Special Indian Agent Jenkins shows that there is practically no "dead and fallen" timber in the meaning of the spirit of the law to preserve to the tribe something that would otherwise be lost. All timber when measured under this class is scaled down so that all that is measured and charged up is *merchantable* lumber.

The Chippewa Commission authorized by the foregoing act of Congress has outlived its usefulness and the purposes for which it was originated, and under the *spirit* of the law is *unlawfully* continued, since the work was to be completed within a "*reasonable time*." It seems quite clear that the *statute did not contemplate the work the commission is now doing*—that of endeavoring to *remove* other Indians to *White Earth Reservation*, the *provisions of law being that all Indians agreeing to the same could take allotments where they resided*. The Indians justly

complain of this waste of tribal funds, the recent report of the Commissioner of Indian Affairs showing that the salaries and expenses of this commission, together with clerks, etc., amounted in the last year to $8,268.55, all of which could be performed by one clerk, for which a compensation of $1,200 per annum would seem adequate, in case of its continuance.

To summarize: The law authorizing the estimation of timber, together with the appointment of the Chippewa Commission, should be repealed.

A statute enacted providing for the measurement of all lumber after being cut, on what is known as "Bank scale," with authority to inaugurate a system, wherever practicable on these Chippewa reservations, similar to that so successfully carried on at Bad River and Lac de Flambeau reservations, in Wisconsin, which, stated briefly, provides for the award of a contract to the most favorable bidder, who would be required to erect a sawmill, employ Indian labor as far as practicable, cut and manufacture a certain amount of lumber each year, pay the Indians a fixed price for the various kinds and qualities of lumber, etc., and give a heavy bond for the fulfillment of all conditions.

The law providing for the cutting of "dead and fallen" timber should be so amended that not less than $3 per 1,000 feet for logs sold should be credited to the tribal funds under treaty stipulations, or else the act should be repealed altogether.

Soliciting your aid in this matter,

I am, very truly, yours,

S. M. BROSIUS,
In behalf of the Indian Rights Association.

EXHIBIT A.

CHIPPEWA INDIAN RESERVATION, MINN.,
Leech Lake Subagency, November 26, 1898.

Statement showing the number of Chippewa Indians who had logging contracts covering lands on the Leech Lake Reservation for the logging season of 1897–98, ending during spring of 1898, their residence, and whether mixed or full-blood Indians, together with the number of feet of pine logged under the contract.

Logger.	Indian blood.	Residence.	Feet logged.
A. Fairbanks	Quarter-breed Chippewa	White Earth Reservation	657,500
C. Dick and P. Bonga	Mixed bloods, Chippewa	White Earth and Leech Lake reservations.	872,100
L. and J. Roy	do	White Earth and Rice River	866,120
Bay shar cum ig	Full-blood Chippewa	Leech Lake Reservation	8[illegible],330
N. and J. B. Pemberton	Mixed bloods, Chippewa	White Earth and Rice River	675,370
B. Fairbanks and E. Warren.	One eighth and one-sixteenth Indian, Chippewa.	White Earth	5,846,350
E. L. Warren	One-sixteenth Indian, Chippewa	do	5,298,670
E. L. Warren	do	do	879,380
Clara Ducette	Mixed blood (white husband)	White Earth (Wild Rice)	1,328,690
John Bonga	Mixed blood. Chippewa	Leech Lake	739,780
Charlotte Weaver	Full-blood (white husband) Chippewa.	do	255,300
W. Bonga and J. Warren	Mixed bloods, Chippewa	Leech Lake and Ponaford	2,108,320
E. L. Warren	One-sixteenth Indian, Chippewa	White Earth	708,230
Total			21,139,150

I hereby certify that, with the exception of the number of feet logged, the above statement is correct to the best of my knowledge.

K. H. CRESSMAN,
Superintendent School at Leech, Minn.

Summary of logs banked, Chippewa Indian reservations in Minnesota, during winter of 1897–98.

Logger.	Indian blood.	Residence.	Feet logged.
White Earth Reservation:			
W. Warren and S. Fairbanks.	Quarter-breed Chippewa	White Earth	837,710
W. V. Warren	do	do	766,410
Morrison & Folstrom	One-eighth breed Chippewa	do	620,300
C. E. Leith	Half-breed (French) Chippewa	do	423,760
Henry Van Nett	do	do	275,070
P. L. Perrault	One-eighth Chippewa	do	261,190
Alex. McKenzie	Half-breed Chippewa	do	200,670
White Earth Reservation.			3,385,110
Red Lake Reservation:			
W. R. Spears	One-eighth Chippewa	Red Lake	3,103,010
O nah e gwon ay beck	Full-blood (female) Chippewa	do	2,916,100
Josette How	Half-breed Chippewa	do	535,400
Serraphine Neddane	do	do	230,500
Red Lake Reservation.			6,568,770
Leech Lake Reservation:			
A. Fairbanks	Quarter-breed Chippewa	White Earth	657,500
C. Dick and P. Bonga	Mixed bloods	Leech Lake and White Earth	872,100
L. and J. Roy	do	White Earth	866,120
Bay sha cum ig	Full blood	Leech Lake	845,330
N. and J. B. Pemberton	Mixed bloods	White Earth	675,370
B. Fairbanks and E. Warren.	One-eighth and one-sixteenth bloods.	do	5,846,350
E. L. Warren	One-sixteenth blood	do	5,298,670
E. L. Warren	do	do	879,380
Clara Ducette	Mixed blood (white husband)	do	1,326,696
John Bonga	Mixed blood	Leech Lake	739,870
Charlotte Weaver	Full blood (white husband)	do	255,300
W. Bonga and J. Warren.	Mixed bloods	Possford and Leech Lake	2,108,330
E. L. Warren	One-sixteenth blood	White Earth	768,230
Leech Lake Reservation.			21,139,156
Winnibigashish Reservation:			
Mark Burns	Half-breed	Pike Bay, Minn	3,565,640
Henry Taylor	do		883,800
Jane Fairbanks	Quarter-breed	Cass Lake	344,220
William Fairbanks	Half-breed	do	1,206,950
John Lyons	Quarter breed	Grand Rapids	2,042,370
Margaret Galbreath	Mixed blood		1,200,640
W. H. Lyons	Quarter-breed	Grand Rapids	922,660
Nellie Lydick	Half-breed	Pike Bay	4,918,800
Nason and Smith	do		937,750
Ne be net tic	Full blood	Winnibigashish	1,077,620
Lizzette Sherer	Half-breed (white husband)	Winnibigashish	1,220,290
Maggie A. Seelye	Quarter-breed	Grand Rapids	5,791,120
Winnibigashish Reservation.			24,120,850
Total logged altogether.			55,213,886

As official interpreter for the White Earth Indian Reservation of the Chippewa Indian language for the past two years, I hereby certify that the above statement of loggers on the Chippewa Indian lands is correct as to the designation of the blood of the different members of the said Chippewa tribe that had contracts for logging thereon as stated above.

JOS. A. MORRISON.

LEECH LAKE, MINN., *November 29, 1898.*

EXHIBIT B.

STATE OF MINNESOTA, *Cass County, ss:*

John Bonga, being first duly sworn according to law, deposes and states:

My name is John Bonga; I am a member of the Chippewa tribe of Indians, and live on the Leech Lake Reservation, being one of the Pillager band of the said tribe.

During the summer or fall of the year 1897 I entered into a contract with the

Brainerd Lumber Company, of Brainerd, Minn., to cut, log, and take out 1,000,000 feet, more or less, of pine logs of the dead and down timber on the Leechlake Reservation aforesaid.

That the said pine timber was sold under this contract for the sum of $5 per 1,000 feet, bank scale; that is, they were to be measured on the bank after being cut and logged to the bank of the lake; and that I was to pay all expenses of cutting and logging the timber to the bank; the surplus remaining after the expenses were deducted from the stated price of $5 per 1,000 feet was to be paid to me and be my profit in the transaction, except 15 per cent going to the Government.

I visited the camp several times, made suggestions from time to time as to the work being done, but no attention was paid to my suggestions; in fact I could plainly see that I was not wanted on the ground of the logging camp at any time.

A large number of the logs were shipped on the cars without being scaled or measured, and I have no means of determining how many feet of lumber they contained.

I thought the lumber camp was mine, and that I would have some say in cutting and banking the logs and other work, and when the logging work was commenced I put in all my logging outfit, consisting of chains, pitchforks, shovels, cant hooks, etc., which were used during the logging operations, and when the work was completed the said outfit was removed from the reservation by the said Brainerd Lumber Company and I have never recovered possession of them.

I believe that the said Brainerd Lumber Company have charged to my expense account all the bedding, axes, chains, dishes, and other articles not consumed or used up by the logging operations under my contract, and that I have been compelled to pay for the same, and that I should be in possession of the said articles so charged to me, all of which have been removed from the reservation by the said Brainerd Lumber Company, and I can not obtain possession of the same.

During the season that the logging was being conducted under the said contract I furnished, at the request of the said Brainerd Lumber Company, more than $125 worth of hay, and have never been paid anything of value for it.

I have asked the foreman of the Brainerd Lumber Company to settle up the business transactions of the said logging contract, but he has paid no attention to my requests.

I have made two trips to the White Earth Agency to secure a settlement with the said lumber company through the agent, J. H. Sutherland, and am not able to get a settlement so far. The said White Earth Agency is always 90 miles from where I live and it is very expensive traveling so far.

I once asked the said lumber company to advance me five pounds of pork on account of my profits in the said lumber and they refused to do it.

When the contract aforesaid was entered with the Brainerd Lumber Company I did not owe them anything, and have never received anything of value from them to the present time, only, upon my visits to the camp during the first portion of the time the logging was being conducted, I ate six meals at the camp when I was there looking out for my own interests.

I have been told that I owe the said Brainerd Lumber Company about $1,500 on account of this contract for logging, and I believe that a portion of this indebtedness may be paid from the logs yet on the skids and in the camp where the logging was done.

I believe that the said lumber company has reported that they have shipped 739,780 feet of pine under the contract I made with them.

So far as my knowledge goes I never gave to anyone any authority to act for me under this contract for logging, and I expected to attend to the work myself.

JOHN (his x mark) BONGA.

Jurat attached.

EXHIBIT C.

STATE OF MINNESOTA, *Cass County, ss:*

M. E. Thurston, being first duly sworn according to law, deposes and states:

That his name is M. E. Thurston, that he is a resident of Walker, Cass County, Minn.

That he is now and has been for the last two years acting as superintendent of the woods work for the Brainerd Lumber Company, of Brainerd, Minn.; that is, superintending the logging business of the said Brainerd Lumber Company.

That about December 1, 1897, he secured a power of attorney from one John Bonga, a member of the Chippewa tribe of Indians, residing upon the Leech Lake Reservation, Minn., to transact all business for the said John Bonga in relation to a certain logging contract that the said John Bonga had entered into between himself

and the Brainerd Lumber Company for logging 1,000 feet of pine logs, more or less, from the lands of the said Leech Lake Reservation, Minn.

That he, the said Thurston, under the authority granted in the said power of attorney, attended to the logging under the said contract, made all purchases of supplies for the camp, and made up all the accounts, etc., and presented the same to the superintendent of logging for the said Indians, R. H. Rosa, residing at White Earth Agency, Minn.

The affiant further states that the said J. Bonga agreed to pay him the sum of $50 per month for acting under the power of attorney granted as stated, but that no money has been paid as compensation for services rendered under the said power of attorney.

That he has never made any claim for the compensation of $50 per month as stated.

That the contract entered into with the said Bonga and the said Brainerd Lumber Company provided that the price to be paid for the logs was $5 per 1,000 feet, bank scale; 15 per cent of this sum to be paid to the United States. All the expenses of logging, etc., to be deducted from sales of lumber per bank scale, and then if any balance remained after paying all the expenses of conducting the business the said balance was to be paid to the United States Indian agent at White Earth Agency, Minn.

That the contract with John Bonga was to be settled with the United States Indian agent, as stated, by April 1, 1898; that the said Brainerd Lumber Company have made settlement with the said United States Indian agent in full for all logs scaled and shipped under the said contract.

That the settlement shows that there is a balance due from the said John Bonga under the said contract of about $1,500 incurred for providing the outfit and provisions for operating the said logging business under the said contract; that this amount is due the United States Indian agent, as stated, to settle all claims against the contractor, John Bonga.

That the said Brainerd Lumber Company have paid the full price of $5 per 1,000 feet for all the logs scaled and shipped under the said contract.

That all time checks issued by logging companies are discounted 10 per cent, where they are made payable April 1, following the operations of the winter's logging. This is the usual custom, and applies to all time checks issued for logging either on or off the Indian lands.

M. E. THURSTON.

Jurat attached.

55TH CONGRESS, 3d Session. } SENATE. { DOCUMENT No. 50.

UNITED STATES OF CENTRAL AMERICA.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING,

IN RESPONSE TO RESOLUTION OF THE SENATE OF DECEMBER 21, 1898, REPORT FROM THE SECRETARY OF STATE, WITH ACCOMPANYING PAPERS, RELATIVE TO THE ALLEGED DISSOLUTION OF THE GOVERNMENT OF THE UNITED STATES OF CENTRAL AMERICA.

JANUARY 6, 1899.—Read, laid on the table, and ordered to be printed.

To the Senate:

In response to the resolution of the Senate of December 21, 1898, requesting the President "if it be not inconsistent with the public service, to inform the Senate whether authentic information is in possession of the Government as to the alleged dissolution of the Government of the United States of Central America," I transmit herewith a report from the Secretary of State, with accompanying papers.

WILLIAM MCKINLEY.

EXECUTIVE MANSION, *January 5, 1899.*

The PRESIDENT:

The undersigned, Secretary of State, to whom was referred the resolution of the Senate of December 21, 1898, has the honor to lay before the President copies of the official communications from the minister of the United States at San José, Costa Rica, on the subject of the dissolution of the United States of Central America.

Respectfully submitted.

JOHN HAY.

DEPARTMENT OF STATE,
Washington, January 4, 1899.

List of papers.

From Mr. Merry to Mr. Hay, telegram, November 29, 1898.
From Mr. Merry to Mr. Hay, telegram, November 30, 1898.
From Mr. Merry to Mr. Hay, No. 174, December 1, 1898.
From Mr. Merry to Mr. Hay, No. 175, December 2, 1898.
From Mr. Merry to Mr. Hay, No. 178, December 10, 1898.

Mr. Merry to Mr. Hay.

Telegram.]

LEGATION OF THE UNITED STATES,
San Jose, November 29, 1898.

The Government of Costa Rica has received information Salvadorian Government triumphant over Federalists. Government of Honduras recognizes Salvadorian Government. Government of Nicaragua is not aiding Federalists.

MERRY.

Mr. Merry to Mr. Hay.

[Telegram.]

SAN JOSE, COSTA RICA,
November 30, 1898. (Received 10.22 p. m.)

Government of Costa Rica has received official notice of the dissolution of the United States Central America. Our next mail explains.

MERRY.

Mr. Merry to Mr. Hay.

No. 174.] LEGATION OF THE UNITED STATES OF AMERICA,
San Jose, Costa Rica, December 1, 1898.

SIR: I have the honor to inclose herewith copy and translation of official telegram received this a. m. by the Government of Costa Rica, announcing the final dissolution of the newly formed "United States of Central America" by the executive council thereof. * * *

I have, etc.,

WILLIAM LAWRENCE MERRY.

[Inclosure in No. 174.—Translation.—Telegram.—Literal copy.—Deposited in Amapala November 29, at 12.40 p. m. Received in San Jose November 30, at 9.20 a. m.]

To the Minister of Foreign Relations:

With real regret I fulfil the duty of advising Your Excellency that the Executive Federal Council has decided today to declare that the existence of the Republic of the United States of Central America is dissolved, not being able to continue in the exercise of its functions consequently. I will send to Your Excellency separately the documents justifying such a transcendent resolution taken as extraordinary necessity in consequence of the important events in Salvador. Central American patriotism feels injured in its most legitimate interests and leaves the responsibility to those who insisted in destroying their work. On leaving my post I have the honor to repeat to Your Excellency the protestations of my consideration and respect.

J. SANCON.

Mr. Merry to Mr. Hay.

No. 175.] LEGATION OF THE UNITED STATES OF AMERICA,
San Jose, Costa Rica, December 2, 1898.

SIR: Respectfully referring to my No. 174, dated 1st instant, I have the honor to advise that the Government of Costa Rica has officially recognized the Regalado anti-Federal Government of Salvador. Guatemala has not, so far as I am advised, taken like action, but is expected to do so soon. I have inclosed herewith telegram just received from Hon. Erasmo Calderon, minister of foreign affairs of the newly habilitated Republic of Nicaragua, which is self-explanatory, and follows the proclamation of President Zelaya, dated November 30, announcing the resumption of her sovereignty as a Republic. I have already advised that the Government of Honduras has recognized the new Government of Salvador. So far as known to me, there are no evidences of further military or political changes in Central America, but there is an undercurrent of disaffection in Honduras and Nicaragua which may find expression in the near future.

I have, etc., WILLIAM LAWRENCE MERRY.

[Inclosure in No. 175.—Translation.—Telegram.—Deposited Palace Managua December 1, 1898, at 6.20 p. m.—Received San Jose December 2, 1898, at 3 p. m.]

UNITED STATES MINISTER:

I have the honor to advise your excellency that by decree of my Government of this date, Nicaragua has assumed the full sovereignty of a free and independent Republic, through the dissolution of the Federal Republic of the United States of Central America, to which it belonged, the ministry of foreign relations being reestablished. In communicating to your excellency the foregoing, I have also the satisfaction of advising you that I have taken charge of that important post by disposition of the President, and that in it I will second the decided intention of my Government to continue cultivating with that of your excellency the most frank and cordial relations for the mutual interest of both countries. While I may be at the head of such an important department I shall have the pleasure of maintaining the most sincere friendship with your excellency.

With all consideration, your excellency's most attentive, sincere servant,

ERASMO CALDERON.

Mr. Merry to Mr. Hay.

No. 178.] LEGATION OF THE UNITED STATES OF AMERICA,
San José, Costa Rica, December 10, 1898.

SIR: I have the honor to inclose herewith documents which may be of interest in connection with the dissolution of the newly formed "Estados Unidos de Centro America."

* * * * * * *

I am, etc.,

WILLIAM LAWRENCE MERRY.

[Inclosure 1, in No. 178.—Translation.]

Executive Power, General Ministry, Thomas Regalado, General of Division and Provisional President of the Republic of Salvador:

Considering—

That the compact of Amapala, celebrated in June, 1895, and all that proceeds therefrom, has not obtained the legitimate sanction of the Salvadorean people, and, moreover, has been a violation of the political constitution of Salvador;

That in the assembled Constituent Assembly of Managua, reunited in June of the present year, the deputies of Salvador were not directly elected by the Salvadorean people, and for that reason had no legal authority to concur to a constituent law that could bind the Republic;

That the union with the Republics of Honduras and Nicaragua under the contracted terms will seriously injure the interests of Salvador:

DECREES.

ART. 1. The Republic of Salvador is not obliged by the contract of Amapala to acknowledge any authority in the constitution of Managua of the 27th August of the current year, and it is released from the contract of union with the Republics of Honduras and Nicaragua.

ART. 2nd. The Republic of Salvador assumes in full its self-government and independence, and will enter the union with the sister Republics of Central America when same is convenient to its positive interests and is the express and free will of the Salvadorean people.

Given in the Executive Palace, November 25, 1898.

T. REGALADO.

The General Minister:

E. ARAIGO.

[Inclosure 2 in No. 178.—Translation.]

A circular from the general ministry.

SAN SALVADOR, *November 30, 1898.*

Senor GOVERNOR OF THE DEPARTMENT, *Present:*

You will please make public the following:

Peace in the Republic is now a real and positive fact, without fear that anyone may be able to distrust it. The federal council was dissolved yesterday in Amapala through want of any assistance.

The Republics of Nicaragua and Honduras have assumed, like Salvador, their autonomy and independence, and we have now frank and friendly relations with their respective Governments. The government of the country occupies itself now in mustering out its troops, keeping only those needed for the conservation of public order. All the Salvadoreans can now quietly devote themselves to their industries, and, without distraction, may be certain of enjoying every guarantee, and that the Government is determined to preserve the peace in order that it may bring prosperity to the country and well-being for all.

Your obedient servant, E. ARAIGO.

[Inclosure 3 in No. 178.—Translation.]

Decree issued at Managua December 1, 1898.

Inasmuch

The Federal Executive Council, installed at Amapala on the 1st ultimo, has declared dissolved the Republic of the United States of Central America by act of the 29th of same month, obliging the State of Nicaragua to reassume its sovereignty.

Therefore the Council of Ministers decrees

1st. Nicaragua assumes her full sovereignty of a free and independent Republic, and in consequence the constitution of 1893, with reforms of 1896, will continue in force throughout.

2d. The department of foreign relations is reestablished and annexed to that of the Government.

3d. All danger to peace and public tranquillity not having yet disappeared, the martial law ruling prior to 1st November last remains in force.

4th. With this decree report shall be made at the next assembly of the National Legislature and will take effect from its publication.

J. S. ZELAYA,

(And by ministers of the departments of Government treasury, instruction and development.)

O

55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 51.

ANNUAL REPORT

OF THE

DIRECTOR

OF THE

BUREAU OF THE AMERICAN REPUBLICS

FOR

THE YEAR 1898.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1899.

BUREAU OF THE AMERICAN REPUBLICS,
NO. 2 JACKSON PLACE, WASHINGTON, D. C., U. S. A.

Director.—FREDERIC EMORY.

WASHINGTON, D. C., U. S. A.:
GOVERNMENT PRINTING OFFICE.

MESSAGE FROM THE PRESIDENT OF THE UNITED STATES,

TRANSMITTING

A communication from the Secretary of State inclosing the Annual Report of the Bureau of the American Republics, with accompanying documents.

JANUARY 6, 1899 —Read, referred to the Committee on Foreign Relations, and ordered to be printed.

To the Senate and House of Representatives:

I transmit herewith a communication from the Secretary of State inclosing the annual report of the Director of the Bureau of the American Republics, with accompanying documents.

In view of the improved condition and increasing usefulness of the Bureau, to which I have already called attention in my annual message, and the welcome assurances of greater activity on the part of the other American Republics in support of its purposes, I cordially indorse the recommendations of the Secretary of State. It will doubtless be as gratifying to Congress as it is to me to be informed that the Argentine Republic has decided to renew its relations with the Bureau, and that there are grounds for hoping that the International American Union, created by the impressive conference of the representatives of our sister Republics and those of the United States in Washington in 1889–90, will soon be perfected by the adhesion of the Republic of Chile to the compact for the support of the Bureau as the organ of the Union. The interest of the United States in giving the fullest possible effect to the laudable desire of the International Conference to promote not only trade intercourse but a closer fellowship among the various Republics of this hemisphere is so evident that I am satisfied the progress made by the Bureau as a practical agency for

attaining these objects will receive the commendation and support of Congress.

WILLIAM MCKINLEY.

EXECUTIVE MANSION,
Washington, January 6, 1899.

The PRESIDENT:

I have the honor to transmit the annual report of the Director of the Bureau of the American Republics, covering more particularly the provisional management of the Bureau since the death of the former Director, Mr. JOSEPH P. SMITH, on the 5th of February, 1898. The report was read and approved at a meeting of the Executive Committee of the International Union of American Republics on the 17th instant. It will be observed that the efforts of the provisional Director, an officer of the Department of State, who was detailed, with the full concurrence of the Executive Committee, to take charge of the Bureau in February last, have been chiefly addressed to the work of carrying out the more important purposes of the former Director; of meeting financial difficulties, which had resulted mainly from business operations growing out of a contract entered into by the Executive Committee in November, 1896, for obtaining advertisements for the MONTHLY BULLETIN, and of reconciling the objections of publishing and other interests to the competition of a bureau supported, in part, by appropriations from the Congress of the United States, with the desire of the Executive Committee to obtain revenue for the support of the Bureau and the proper extension of its work.

It is gratifying to be able to state that the provisional management has substantially attained these objects, and that the Bureau seems to have entered upon a path of development which promises the gradual fruition of the purposes of the International American Conference of 1889–90 in creating it as an agency for promoting fraternal intercourse and trade among the various

Republics of the Western Hemisphere. The efforts of the Bureau in the past, as was indicated in the annual report of the Director for 1897, have, necessarily, been more or less of an experimental character in consequence of the fact that the plan outlined by the International Conference was novel, both in conception and design, and its execution involved the solution of many perplexing problems. It is hoped that solid ground has at length been reached, and strong encouragement for indulging this hope is found not only in the present condition and prospects of the Bureau, but in the fact that the other members of the Union are giving it their active and cordial support.

From the report of the Director, it appears that the responses to the recent requests for the payment of the annual contributions of the Latin-American countries to the support of the Bureau have already resulted in the payment by five of them of a sum considerably larger than the whole amount received during the previous fiscal year. It will also be noted that certain members of the International Union which, for some years, have ceased to take an active part now evince a desire to resume their former relations with the Bureau and renew their contributions for its maintenance. Among these is the Argentine Republic, which has just given official notice of its intention. The Director also calls attention to expressions of interest on the part of the Chilean Minister to the United States, which justify the hope that Chile, the only country participating in the International American Conference which did not subsequently become a member of the Union, will decide to avail itself of its privilege, thus completing the solidarity of the American Republics in the effort to weld together and promote the common interests of all.

At a time when the thoughts of men are directed more earnestly than ever before to the harvest awaiting the industries and commerce of the United States in other lands, the importance of availing ourselves of the many proffers of friendship from our southern neighbors, in the spirit of fair exchange and mutual

helpfulness, is clearly obvious; and when we consider the many points at which the interests and aspirations of the Latin-American Republics coincide with those which are most deeply graven upon our national life, it would seem to be no less evident that every step taken toward a closer identification in sympathies and purposes must contribute sensibly to the economic and social development of our sister Republics as well as of ourselves. From the point of view of its probable usefulness in these directions, the increasing activity of the Bureau of the American Republics on lines which commend themselves especially to the representatives of the other countries of the International Union seems to me to be a subject for special congratulation, and I would respectfully suggest that the attention of Congress be called to the fact that the effort is being made to economize as well as to develop the Bureau's resources, so that its practical utility may be increased with the least cost to the public treasury.

The Secretary of the Treasury, at my request, has transmitted to Congress the estimates for the Bureau for the next fiscal year, and also the draft of an act permitting the use by the Bureau of amounts received from the other countries during the current fiscal year. The reasons for the proposed legislation are fully stated in communications from the Director of the Bureau accompanying the letters from the Secretary of the Treasury to the House of Representatives, and I hope they will commend themselves to Congress as being fully justified by the actual requirements.

I have the honor to indorse the recommendation of the Director that Congress be asked to authorize the printing of 2,500 copies of the annual report for distribution by the Bureau to meet the demands for information as to its present condition and its plans for the future.

Respectfully submitted.

JOHN HAY.

DEPARTMENT OF STATE,
Washington, December 30, 1898.

ANNUAL REPORT

OF THE

BUREAU OF THE AMERICAN REPUBLICS.

BUREAU OF THE AMERICAN REPUBLICS,
Washington, D. C., December 21, 1898.

SIR: In pursuance to instructions from the Executive Committee of the International Union of American Republics, at its meeting on the 17th instant, I have the honor to request that the accompanying report of the operations of the Bureau of the American Republics during the past year, together with a brief synopsis of the proceedings of the Executive Committee at the recent meeting, be submitted to the President, with the view to its transmission to the Congress of the United States.

In addition to the announcement in the report that the Republic of Chile may, for the first time, give its active support to the Bureau, I am happy to be able to state that official information has just reached me that the Argentine Republic, which, since 1891, has not contributed to the support of the Bureau, has decided to take the necessary steps for the renewal of its former relations. For this welcome result, special acknowledgment is due the Argentine Minister in Washington, Dr. MARTIN GARCIA MÉROU, who has been at special pains to impress upon his Government the increasing usefulness of the Bureau.

In order that the Bureau may be enabled to answer inquiries from many quarters as to its condition and purposes, I would

respectfully recommend that Congress be asked to authorize the printing of an edition of 2,500 copies of the annual report for distribution by the Bureau.

I have the honor to be, sir, your obedient servant,

FREDERIC EMORY,
Director.

The SECRETARY OF STATE.

PROCEEDINGS OF THE EXECUTIVE COMMITTEE, INTERNATIONAL UNION OF AMERICAN REPUBLICS, SATURDAY, DECEMBER 17, 1898.

WASHINGTON, D. C., *December 17, 1898.*

The executive committee of the International Union of American Republics met in the diplomatic reception room, Department of State, Saturday, December 17, 1898, at 11 a. m.

The meeting was called to order by Hon. JOHN HAY, Secretary of State, as chairman.

The other members present were—

Señor Dr. DON MARTIN GARCIA MÉROU, Argentine minister.

Señor DON JOAQUIN BERNARDO CALVO, Costa Rican minister.

Señor DON MANUEL M. PONTE, chargé d'affaires of Venezuela.

The Director of the Bureau of the American Republics, Mr. FREDERIC EMORY, was also present.

The committee having signified its readiness, the Director read the annual report of the Bureau, after which he explained the leading features of the financial statement, as follows:

The first page gives the receipts and expenditures during the fiscal year ended June 30, 1898. I did not take charge until the 5th of February, 1898, and the detailed statement on the next page will show how I expended the money during the remainder of the fiscal year. Page 3 is a statement of the receipts and

expenditures from July 1, 1898, to November 30, 1898, and this is important, because it shows the existing condition of the Bureau and its resources. The annual appropriation was $36,000 and the expenditures from that appropriation were $19,430.79, leaving a balance December 1, 1898, of the appropriation of $16,569.21. The receipts from advertisements and sales of Commercial Directory and other publications amount altogether during this period, July 1 to November 30, to $17,812.35, the expenditures to $16,078.85, leaving a balance of $1,733.50. To that I have added the face value of the advertising December 1, 1898, $16,500, and uncollected bills, $8,000, showing the total resources of the Bureau December 1, 1898, to be $42,802.71. The fourth table shows the expenditures made by me since the 1st of July to the 1st of December in detail, and in that statement appears an item—commissions on contract prior to March 1, 1898—which means that those commissions were earned before I took charge of the Bureau and that I have been settling them as well as I could.

The ARGENTINE MINISTER (Mr. MÉROU): We find the report of Mr. EMORY to be very satisfactory, and we can fully approve it. It is very gratifying to be informed that the Government of Chile may come into the Union with the other Latin-American countries and unite with us, thus making it complete. I think perhaps it would be well to put upon the record some expression of this committee's pleasure in that regard.

The MINISTER FROM COSTA RICA (Mr. CALVO): I fully concur with the suggestion of the minister from Argentina, and hope the Director of the Bureau will be authorized to express to the minister of Chile the sincere desire of the committee that Chile may come into the Union.

The CHAIRMAN: In accordance with the expressions of the committee, the Director will please communicate to the minister from Chile the gratification of the committee at the prospect of Chile becoming a member of the Union.

The report was then approved, and the Director was instructed to take the usual course for its transmission to the Congress of the United States.

The committee thereupon adjourned.

ANNUAL REPORT.

BUREAU OF THE AMERICAN REPUBLICS,
Washington, December 17, 1898.

The Secretary of State, Chairman and
Members of the Executive Committee of the
International Union of American Republics.

GENTLEMEN: I have the honor to submit a report of the operations of the Bureau of the American Republics since I was placed in charge of it upon the death of the late Director, Mr. JOSEPH P. SMITH, on the 5th of February, 1898. The premature loss to the Bureau of the services of Mr. SMITH, who had been its Director less than a year, cut short the prosecution of plans which he had conceived and partly carried into effect for greatly enlarging the scope and practical usefulness of the work which the International American Conference had in view when it created the Bureau in 1890. The details of Mr. SMITH's purposes are clearly set forth in the annual report prepared by his direction—but never formally approved by him—which I presented to the committee on the 28th of February last, for the reason, as I stated in my communication of that date, that it substantially embodied his views. This report gives a careful summary of the work of the Bureau up to the time I was designated by the Secretary of State, with the approval of the executive committee, as Acting Director.

The report has been printed by order of the Congress of the United States, and it is, therefore, unnecessary for me to repeat its conclusions. It is gratifying to me, however, to be able to state

that, in so far as it was possible under the conditions I found existing, I have been able to carry forward the purposes to which the late Director attached more particular importance. Among these was the completion of the Commercial Directory of the American Republics, in two volumes, numbering altogether 2,643 pages of carefully collected descriptive and statistical matter, setting forth the natural resources, industries, commerce, and existing laws affecting agriculture and trade enterprises in all of the countries of the Western Hemisphere, together with lists of merchants and manufacturers in each who were believed to be especially interested in the development of trade relations among the different countries. The second volume (1,589 pages) was completed in November last, and the distribution of copies began November 24, 1898, about a year after the publication of the first volume. It is believed that this work, which was wholly conceived by the late Director, is unique in its scope and its general accuracy, and that it will be found to be of great practical value, not only to business houses engaged in or about to enter the Latin-American trade, but as a comprehensive book of reference for all who are seeking information as to the commercial and industrial development of the American Republics and the West Indian and other colonial possessions of this hemisphere. The thanks of the Bureau are especially due to the National Association of Manufacturers and the Philadelphia Commercial Museum for valuable advice and assistance in compiling the commercial lists for that part of the second volume of the Commercial Directory which is devoted to the United States.

Another object which the late Director had especially at heart, as indicated in his annual report, was the development of the Bureau's usefulness on such lines as would commend it to the business houses of the Latin-American Republics as a practical agency for removing obstacles to closer commercial intercourse with the United States and opening new channels of trade. I am happy to be able to state that sensible progress has been made

in this direction, and that I may repeat and emphasize the statement made by the late Director in the annual report for 1897, namely, that "The Bureau is indebted for much of its recent growth to the more active and vigilant participation of the representatives in Washington of the various Republics interested." At the close of the year 1898, the Bureau finds itself in the encouraging position of having the unanimous and cordial support of the diplomatic representatives of all the members of the International Union, and is induced to hope that the Latin-American Republics will exhibit a constantly increasing interest in its affairs. The many expressions of indorsement and approval which are to be found in the files of the Bureau fully justify this expectation. A pleasing incident, confirming this view, was the recent visit to the Bureau of the President of Costa Rica, who, after examination of its workings, expressed his approval and the intention to contribute in every way in his power to its development.

The Bureau also feels itself to be under special obligations to the former member of the executive committee, the minister from Mexico, Mr. ROMERO, who retired from the committee, in conformity with the rule for the change of membership every year, in June last, but has still continued to exhibit an active interest in its affairs; and to the former minister to the United States from Brazil, Mr. MENDONÇA, who, from the beginning of the Bureau, gave it his counsel and zealous support. The Bureau has been honored with expressions of interest in its work from the recently accredited Chilean minister to the United States, Señor DON CARLOS MORLA VICÚNA. These encourage the hope that the Government of Chile, which, although it was represented in the International American Conference, which created the Bureau, has never availed itself of the right to enter the Union, may decide in the near future to give the Bureau its active support.

As I had the honor of reporting to the committee at its

meeting on the 28th of February last, I found the affairs of the Bureau when I took charge of it in a somewhat disordered condition, owing to the long illness of the late Director. The finances were also in an unsatisfactory condition, as the result of a contract entered into by authority of the executive committee, under the late Director's predecessor, in November, 1896. The object of the committee in approving this agreement was to obtain revenue from the advertisements in the MONTHLY BULLETIN of the Bureau to defray the cost of that publication, to improve its contents, and gradually increase its circulation, with the view of disseminating among the various countries information as to the resources, industries, and commerce of each. The contract provided that the solicitor for advertising should receive a commission of 40 per cent upon the face value of the advertising obtained. As a basis for the successful prosecution of these efforts, an edition of the BULLETIN had for some months been printed at a cost of over $9,000 per month, or $108,000 per year. The annual gross income from advertising was estimated at $60,000, but from this amount 40 per cent commission was to be deducted, leaving a net revenue of $36,000.

Inasmuch as it had been the practice to pay the commissions immediately, and it was necessary to wait for reimbursement until the bills for advertising could be collected, it was obvious that, even if the prospective revenue were likely to be sufficient, considerable capital would be required to meet the immediate outlay. The annual appropriation of the Bureau was but $28,000, and the enlargement of its work had necessitated the employment of a number of persons in addition to the previous force. A deficiency appropriation of $41,972 was voted by the Congress of the United States in January, 1898. The Bureau was in arrears at this time for payment of salaries and a number of claims growing out of its business operations, as well as increased work of compilation and translation, typewriting, etc., for various

publications. It was evident that the balance remaining from the deficiency appropriation would not more than suffice for these purposes and the efficient prosecution of the work in progress.

Under these circumstances, I suggested to the executive committee that it would be advisable to terminate the contract for soliciting advertisements upon commission, especially as there had been complaints from several quarters of competition by the agents of a bureau supported in part by the Government of the United States with private interests engaged in the advertising business. Upon the other hand, it seemed possible to accomplish the original intention of the executive committee to obtain revenue for the support of the MONTHLY BULLETIN without solicitation by persons having more or less speculative interest, and without undue competition with private interests, by continuing to offer to merchants and manufacturers the use of the pages of the BULLETIN as a means of making known the merits of their goods in the markets they desired to reach. The executive committee accepted these conclusions, and appointed me Director of the Bureau for a period not to exceed the current fiscal year ending June 30, 1898, with full power to reorganize the affairs of the Bureau, to cancel the engagements entered into for advertising, canvassing for subscriptions, or other business purposes which might seem to me to be injurious to the interests of the Bureau, etc., "having always in view the general interests of the International Union and the wishes of the committee."

Under the authority thus conferred, I at once gave notice of the termination of the advertising contract, and proceeded to reorganize the Bureau with the view of reconciling the business features which seemed to me to be valuable with official limitations and the means at command.

On the 21st of May, 1898, I had the satisfaction of being able to report to the committee that the economies enforced had resulted in a saving in the obligations which were being incurred

when I took charge of the Bureau of about $5,000 per month, and that I trusted the resources of the Bureau would be sufficient for its purposes for the remainder of the fiscal year ending June 30, 1898. This expectation was realized, the balance of $702.78 remaining at the end of the said fiscal year. The conclusions and recommendations made by me in the report at the meeting of May 21 were approved by the executive committee.

Upon the 25th of June, 1898, another meeting of the executive committee was held, at which I announced the approaching expiration, June 30, of the term of my appointment as provisional Director. The committee, having satisfied itself that the conditions did not then justify the appointment of a permanent Director, extended my term as provisional Director to the 1st of October, and reaffirmed the special powers which it had conferred on the 28th of February. Further extensions were made at meetings of the executive committee September 27 and October 26, 1898.

At the latter meeting, the renewal of the provisional management was made indefinite, in order that it might not be necessary for the committee to take action again until such time as the plans in process of execution for development of the work upon a more economical basis should reach the point of consummation.

The efforts of the provisional management have necessarily been devoted, to a large extent, to the work of reorganization, completion of the late Director's plans, the settlement of claims, and the adjustment of a number of questions growing out of the change of business methods. It was thought advisable not only to readjust the affairs of the Bureau, but to demonstrate, if possible, the practicability of increasing its usefulness by obtaining a larger revenue from advertising and the sale of publications, thus obviating the necessity of again applying to the Congress of the United States for a deficiency appropriation. It was hoped that this result might be reached without intrenching improperly upon the rights of private individuals engaged in the advertising or

publishing business. The methods employed in obtaining advertisements within these limits are fully set forth in the business announcements in the MONTHLY BULLETIN since the 5th of February last. The results justify the hope that the Bureau will receive the pecuniary support of representative business houses which have an obvious interest in the development of the trade relations of the various American Republics, and that, at no distant day, the BULLETIN may be made self-supporting without the agency of solicitors upon commission and the consequent outlay of money in advance of receipts from the advertisements.

Contracts for advertising have been renewed to the amount of $4,961 and new contracts have been secured to the amount of $1,018. These results, though small in proportion to the gross amount secured under the former policy, afford a substantial basis for encouragement in view of the fact that they have been obtained without undue solicitation and will yield the Bureau the full amount of their face value. I have no doubt that the continuance of the present policy as to advertising will, within a comparatively short time, result in placing the BULLETIN upon such a basis that its circulation may be increased, the character of the contents greatly improved, and its expenses provided for independently of Government contributions. The gratuitous distribution of the BULLETIN in the United States has entailed expenditures which, it seemed to me, were not warranted by the Bureau's resources, and the free circulation is now limited to newspapers, trade bodies, libraries, Government officials, and applicants for specific information. Under the circumstances, I have felt warranted in asking that the Congress of the United States shall provide for an edition of 5,000 copies per month for the next fiscal year, ending June 30, 1900, for distribution in this country, as a means of promoting a better knowledge of the resources and commercial possibilities of the Latin-American Republics. An edition of 8,000 copies is distributed in Mexico, Central America, South America, and the

West Indies, and the cost of this edition, as well as of the copies now being distributed in the United States, can, in my judgment, be met by the probable receipts from advertising.

Besides the publication of the Bulletin, the work of the Bureau includes the preparation and printing from time to time of handbooks of the various Latin-American countries. Four of these have been completed, and I am only waiting the means of defraying the cost of printing and distribution. The late Director, in his report, called attention to the fact that the appropriations for the Bureau had never been sufficient to meet the expense of printing the various documents called for by the plan of its operations as outlined by the International Conference, especially in view of the fact that all of them must be printed in the language of the country to which they relate, as well as in English. Upon this point, he said:

> Investigation will show that the former Directors of the Bureau were compelled to resort to various expedients to enable them to print the publications which have been issued from time to time. It would have been impossible to do this from the funds at their command. It was done only by means of authority obtained from the Congress of the United States to print the various handbooks and other publications as Congressional documents, to be paid for out of the general printing fund.

As a means of meeting this difficulty, at least in part, the late Director suggested to the representatives of the countries composing the International Union that "steps be taken to secure to the Bureau the use of the amounts contributed by the other Republics, which amounts at present are paid into the United States Treasury, to reimburse the latter to the extent of the different quotas of the countries." This, he estimated, would make the revenue of the Bureau from such sources about $45,000 or $50,000. I have taken steps to give this suggestion practical effect, and the Congress of the United States has been asked to authorize the action indicated. The other countries of the International Union have

been requested to state whether they would have any objection to the proposed change, and four of them have already replied, expressing their acquiescence. The amounts which have been received from the other countries have fluctuated from year to year, but I have the pleasure of stating that there are substantial grounds for hoping that this year the contributions will largely exceed the annual average. Notification has reached the Bureau of the prompt payment by five of the countries of their quotas, amounting to $5,027.78; one of them, Venezuela, having overpaid to the amount of $540.41 during the fiscal year ended June 30, 1898. This amount is in excess of the total amounts received from the other countries of the Union during the previous fiscal year, viz. $4,216.02.

Besides its various publications, the Bureau is actively engaged in furnishing information, verbally or by letter, to applicants, not only from the United States but from many quarters in other parts of the world, especially the countries of the International American Union. This branch of the work has grown to such proportions that the late Director established a division of information for the special purpose of answering such inquiries. These have continued to grow in number, and the Bureau is frequently in receipt of letters from the other countries of the Union requesting its aid in securing information in practical trade matters, or in interesting United States capital and enterprise in agricultural, mining, industrial, or commercial possibilities in the various countries. Many of the letters refer in appreciative terms to the MONTHLY BULLETIN of the Bureau, a fact which indicates that that publication is being efficiently distributed in the Latin-American countries and is making itself known as a practical medium of promoting trade. The Bureau responds to requests from promoters of special enterprises seeking capital in the United States only so far as to call attention in the pages of the BULLETIN to such undertakings, and not then unless it has satisfied itself by

careful inquiry that the projects indicated may be properly given such publicity. In cases where it is felt the Bureau can give no aid, the inquirers are referred to such organized trade bodies in the United States as more specifically cover the field they wish to enter.

The questions usually asked relate to the special agricultural and mineral resources of the different countries; the manner of obtaining lands for farming industries, cattle raising, and mining purposes; the methods employed for the production of sugar, coffee, cacao, india rubber, tropical fruits, etc.; and the steps to be taken in order to acquire land, either for individuals or for the conduct of enterprises on an extensive scale. Requests are frequently made for information as to the rates of duties imposed by the tariffs of the several countries upon special articles or classes of merchandise, the port charges and harbor regulations, statistics of exports and imports, conditions imposed by the laws of a country upon industries and trade, the names of government officials to be communicated with on special subjects, etc. From the Latin-American countries come, in increasing number, requests for information as to the markets in the United States for certain products of those countries and the kinds of goods produced or manufactured in the United States which may be taken in exchange, the names of importers and exporters interested in Latin-American trade, and other particulars showing an active desire to cultivate closer relations.

In pursuance to the recommendation of the late Director, in his report presented to the executive committee in February last, the Bureau was represented by an exhibit at the Trans-Mississippi International Exposition at Omaha, Nebraska, which closed on the 31st of October last. A report from the agent of the Bureau at the exposition will be found in the November, 1898, number of the MONTHLY BULLETIN, pages 777–779. This report indicates that the exhibit served its purpose, not only in making more

widely known the usefulness of the Bureau to the people of the United States, but also in attracting attention to the commercial and industrial possibilities of Mexico, the Central and South American Republics, and the West Indies. The late Director also suggested that the Bureau should be represented at the Paris Exposition in 1900, as well as at contemplated expositions in the different countries of the International Union. Inasmuch as my tenure of the directorship is merely provisional, I have not felt warranted in taking any steps to carry out these recommendations, but respectfully submit them for the further consideration of the executive committee.

I inclose herewith a statement of the finances of the Bureau for the fiscal year ended June 30, 1898, and also from the time I took charge, on the 5th of February last, to the 1st instant; also copies of the MONTHLY BULLETIN issued during the past calendar year containing announcements of the successive steps in the work of the Bureau.

It affords me great pleasure to renew for myself the grateful acknowledgments of the late Director to the members of the Executive Committee, and, I may add, to the representatives of all the countries of the International Union, for their valuable cooperation in the conduct of the Bureau's affairs and their cordial support of the efforts to increase its usefulness.

I have the honor to be, gentlemen, your obedient servant,

FREDERIC EMORY,
Director.

RECEIPTS.

July 1, 1897, to June 30, 1898.

Appropriations:		
Annual, 1898	$28,000.00	
Deficiency, 1898	41,972.00	
		$69,972.00
Advertisements		32,051.41
From sales:		
Commercial Directory	16,681.50	
Other publications	5,904.14	
		22,585.64
Total		124,609.05
Expenditures		123,906.27
Balance July 1, 1898		702.78

EXPENDITURES.

July 1, 1897, to June 30, 1898.

	Paid by disbursing clerk, Department of State.		Paid by Director of Bureau* from "receipts from sales, rents, etc."	Total.
	From "appropriation 1898."	From "receipts from sales, rents, etc."		
Compensation	$37,999.69	$8,184.58	$3,908.16	$50,092.43
Stationery	6,968.95	964.69	781.00	8,714.64
Rent of office building	1,666.66	833.35	.....	2,500.01
Commissions	5,884.70	5,200.00	13,105.80	24,190.50
Expenses New York office	360.83	553.43	2,065.63	2,979.89
Typewriters	1,086.07	.....	.....	1,086.07
Furniture, repairs, etc	1,191.65	165.79	.....	1,357.44
Postage stamps	778.00	.....	450.00	1,228.00
Library	89.12	241.61	100.60	431.33
Cablegrams and telegrams	731.62	127.91	96.46	955.99
Printing	7,636.01	11,773.94	1,000.00	20,409.95
Maps	2,714.34	.....	206.25	2,920.59
Telephone	263.96	62.50	.....	326.46
Miscellaneous	2,547.44	2,314.45	1,851.08	6,712.97
Total	69,919.04	30,422.25	23,564.98	123,906.27

*No payments have been made by the Director since February 5, 1898, except upon vouchers drawn upon the disbursing officer of the Department of State against the appropriation or the receipts from sales, rents, etc., which are deposited promptly in the United States Treasury.

February 5, 1898, to June 30, 1898.

	Paid by disbursing clerk Department of State, appropriation 1898.	Paid by disbursing clerk, receipts, etc.	Total.
Compensation	$19,476.57	$514.61	$19,991.18
Stationery	3,666.10	13.69	3,679.79
Rent of office building	666.66	333.34	1,000.00
Commissions on contracts made prior to March 1, 1898	.....	5,200.00	5,200.00
Expenses, New York office	335.83	553.45	889.28
Furniture	555.61	.....	555.61
Library	32.12	145.69	177.81
Cablegrams and telegrams	602.80	.....	602.80
Printing	6,142.38	10,750.26	16,892.64
Maps	2,347.50	.....	2,347.50
Telephone	97.02	.....	97.02
Miscellaneous	1,522.28	1,684.97	3,207.25
Total	35,444.87	19,196.01	54,640.88

Total receipts and expenditures from July 1, 1898, to November 30, 1898.

Annual appropriation, 1899			$36,000.00	
Expenditures			19,430.79	
Balance December 1, 1898				$16,569.21
Receipts from sales, rents, etc.:				
Balance July 1, 1898			649.82	
From advertisements		$16,444.70		
From sales:				
Commercial Directory	$260.00			
Other publications	457.83			
		717.83		
			17,162.53	
			17,812.35	
Expenditures			16,078.85	
Balance December 1, 1898				1,733.50
Value of advertising December 1, 1898				16,500.00
Uncollected bills				8,000.00
Total resources of Bureau December 1, 1898				42,802.71

EXPENDITURES.

July 1, 1898, to November 30, 1898.

	From annual appropriation, 1899.	From receipts from sales, rents, etc.	Total.
Compensation	$14,830.44	$2,743.54	$17,573.98
Stationery	85.80	52.41	138.21
Rent	833.33	.....	833.33
Printing	3.279.25	9,456.36	12,735.61
Postage	153.17	266.00	419.17
Library	36.50	11.25	47.75
Commissions on contracts prior to March 1, 1898	.....	2,375.18	2,375.18
Telephone	33.75	33.75	67.50
Miscellaneous	178.55	1,140.36	1,318.91
Total	19,430.79	16,078.85	35,509.64

INFORME ANUAL

DE LA

OFICINA DE LAS REPÚBLICAS AMERICANAS.

MENSAJE DEL PRESIDENTE DE LOS ESTADOS UNIDOS REMITIÉNDOLO AL CONGRESO.—CARTA DEL SECRETARIO DE ESTADO COMPENDIANDO LOS RESULTADOS OBTENIDOS.

RESTABLECIMIENTO DE LAS RELACIONES CON LA REPÚBLICA ARGENTINA.—ENTRADA PROBABLE DE CHILE EN LA UNIÓN.—RECIENTES PROGRESOS HECHOS EN LOS TRABAJOS DE LA OFICINA.

El informe anual del Director de la Oficina de las Repúblicas Americanas para el año de 1898 fué enviado, con los documentos anexos, al Congreso de los Estados Unidos el día 6 de enero, acompañado del siguiente mensaje del Presidente:

Al Senado y Cámara de Diputados:

Os envío una comunicación del Secretario de Estado que contiene el informe anual del Director de la Oficina de las Repúblicas Americanas, con los documentos anexos.

Habiendo mejorado la condición de la Oficina y prestando ésta hoy mayores servicios, según lo manifesté en mi mensaje anual, y en vista de las promesas de que las otras Repúblicas americanas se interesarán más en su mantenimiento, doy mi sincera aprobación á las recomendaciones del Secretario de Estado. Seguro estoy de que será tan grata para el Congreso, como lo ha sido para mí, la noticia de que la República Argentina se ha resuelto á restablecer

sus relaciones con la Oficina, y de que hay esperanzas de que la Unión Internacional Americana, creada por la notable conferencia de los representantes de nuestras repúblicas hermanas y de los Estados Unidos, que celebró sus sesiones en Wáshington en 1889–90, llegue á ser completa mediante la adhesión de la República de Chile al pacto que se firmó para el mantenimiento de la Oficina como órgano de la Unión. Los intereses de los Estados Unidos en llevar á efecto los laudables deseos de la Conferencia Internacional en cuanto á promover no solamente el tráfico sino más estrechas relaciones de amistad entre las repúblicas de este hemisferio, son tan palpables, que no dudo que la Oficina contará con las simpatías y el apoyo del Congreso en su carácter de agencia práctica para la realización de los objetos mencionados.

WILLIAM MCKINLEY.

MANSIÓN DEL EJECUTIVO,
Wáshington, 6 de enero de 1899.

CARTA DEL SECRETARIO DE ESTADO.

Señor PRESIDENTE:

Tengo la honra de remitiros el informe anual del Director de la Oficina de las Repúblicas Americanas, que versa principalmente sobre la administración provisional de la Oficina desde la muerte del último Director, Mr. JOSEPH P. SMITH, acaecida el 5 de febrero de 1898. El informe fué leído y aprobado el 17 del corriente en una reunión de la Comisión Ejecutiva de la Unión Internacional de Repúblicas Americanas. Se observará que los esfuerzos del Director provisional, que es un empleado del Departamento de Estado, designado en el mes de febrero próximo pasado, con la aprobación de la Comisión Ejecutiva, para que se hiciese cargo de la Oficina, se han dirigido principalmente á la realización de los importantes proyectos de su predecesor, así como á hacer frente á las dificultades económicas, producidas en su mayor parte por

operaciones mercantiles á que dió lugar un contrato celebrado por la Comisión Ejecutiva en noviembre de 1896, á fin de obtener anuncios para el BOLETÍN MENSUAL; habiendo sido también objeto de esos esfuerzos el acallar la oposición de algunas empresas periodísticas y otras á la competencia que les hacía una Oficina sostenida en parte con sumas votadas por el Congreso de los Estados Unidos, satisfaciendo al mismo tiempo los deseos de la Comisión Ejecutiva de obtener fondos para mantener la Oficina y aumentar debidamente sus operaciones.

Me es satisfactorio poder asegurar que la administración provisional ha obtenido los fines indicados y que la Oficina parece haber entrado en una vía de desarrollo que promete la gradual realización de los propósitos de la Conferencia Internacional Americana de 1889–90, que la creó como una agencia para promover las relaciones amistosas y el tráfico entre las varias repúblicas del hemisferio occidental. Los esfuerzos de la Oficina en lo pasado, según se indicó en el informe anual del Director para 1897, han sido necesariamente de carácter más ó menos experimental, debido al hecho de que el plan trazado por la Conferencia Internacional era nuevo, tanto en su concepción como en su alcance, y para llevarlo á efecto había que resolver muchos problemas complicados. Es de esperar que estemos ya pisando sobre terreno firme, y nos induce á abrigar esta esperanza no sólo la condición actual de la Oficina y lo que promete para el porvenir, sino el hecho de que los otros miembros de la Unión le dan su apoyo cordial y decidido.

Por el informe del Director se ve que la solicitud últimamente hecha á los países latino-americanas de que pagasen sus cuotas anuales para el sostenimiento de la Oficina, ha dado por resultado que cinco de ellos han pagado una cantidad mayor que toda la suma recibida durante el año económico anterior. También se observará que algunos de los miembros de la Union Internacional, que por algunos años habían dejado de figurar en ella, manifiestan

ahora deseos de reasumir sus pasadas relaciones con la Oficina y de volver á contribuir con sus cuotas para el mantenimiento de la misma. Uno de los países en referencia es la República Argentina, que acaba de comunicar oficialmente su intención de obrar de la manera indicada. El Director llama asimismo la atención al interés que manifiesta el Ministro de Chile en los Estados Unidos respecto de la Oficina, lo cual justifica la esperanza de que aquella República, que fué el único de los países que tomaron participación en la conferencia Internacional Americana que no entró en la Unión, se resolverá á entrar en ella, completando así la unión de las Repúblicas Americanas, destinada á hacer más estrechos los lazos que las ligan para beneficio de todas.

En el momento en que la atención de todos se dirige con más interés que nunca á los mercados que en otras tierras se ofrecen á la industria y al comercio de los Estados Unidos, es de la mayor importancia que aprovechemos las numerosas muestras de amistad que nos dan nuestros vecinos del sur con el fin de establecer un cambio de productos y de ayudarnos mutuamente; y si tomamos en consideración los muchos puntos en que las aspiraciones é intereses de las repúblicas latino-americanas están de acuerdo con los que nos son más caros, es evidente que cada paso que tienda á identificarnos en simpatías y propósitos debe contribuir notablemente al desarrollo económico y social, tanto de nuestras repúblicas hermanas como de nosotros mismos. Desde el punto de vista de los servicios que en este sentido puede prestar la Oficina de las Repúblicas Americanas, el incremento que se dé á sus trabajos, de acuerdo con las miras de los representantes de los otros países que figuran en la Unión Internacional, debe, á mi juicio, ser motivo de congratulaciones,y me permito indicar que se llame la atención del Congreso al hecho de que se están haciendo esfuerzos para economizar y aumentar los recursos de la Oficina, en orden á que pueda ser de mayor utilidad con el menor costo posible al tesoro público.

A solicitud mía, el Ministro de Hacienda ha enviado al Congreso un cálculo de los gastos de la Oficina para el próximo año económico, así como un proyecto de ley para que se permita á dicha Oficina hacer uso de las cantidades que se reciban de los otros países durante el presente año económico. Las razones que se tuvieron en mira al formular este proyecto de ley están expuestas en las comunicaciones del Director de la Oficina, que acompañan á las que el Ministro de Hacienda ha dirigido á la Cámara de Diputados, y espero que el Congreso las estimará justificadas por las necesidades del caso.

Tengo la honra de apoyar la recomendación del Director de que se pida autorización al Congreso para imprimir 2,500 ejemplares del informe anual, á fin de que la Oficina pueda distribuirlos para satisfacer las solicitudes que se reciben pidiendo informes acerca de su condición actual y de sus planes para lo futuro.

Quedo del Señor Presidente atento y seguro servidor,

JOHN HAY.

DEPARTAMENTO DE ESTADO,
Wáshington, 30 de diciembre de 1898.

CARTA DEL DIRECTOR.

OFICINA DE LAS REPÚBLICAS AMERICANAS,
Wáshington, D. C., 21 de diciembre de 1898.

SEÑOR: De conformidad con las instrucciones que me fueron dadas por la Comisión Ejecutiva de la Unión Internacional de Repúblicas Americanas en la cesión del 17 del corriente, tengo la honra de suplicaros que el informe que acompaña á la presente, y que versa sobre los trabajos de la Oficina de las Repúblicas Americanas durante el año pasado, junto con un corto resumen de las deliberaciones y acuerdos de la Comisión Ejecutiva en dicha sesión, sea sometido al Señor Presidente á fin de que se sirva remitirlo al Congreso de los Estados Unidos.

Además de la noticia, contenida en el informe, de que es

posible que la República de Chile dé por primera vez su apoyo á la Oficina, me es grato manifestar que acabo de ser informado oficialmente de que la República Argentina, que desde 1891 no había contribuido al mantenimiento de la Oficina, ha resuelto tomar las medidas necesarias á fin de reanudar sus antiguas relaciones. Este feliz resultado se debe especialmente al Doctor Don MARTÍN GARCÍA MÉROU, Ministro de la República Argentina en Wáshington, quien se ha empeñado en hacer comprender á su Gobierno la importancia creciente de la Oficina. A fin de poder contestar las preguntas que de muchas partes se me dirigen respecto de la condición y propósitos de la Oficina, me permito recomendaros que se pida al Congreso autorización para imprimir una edición de 2,500 ejemplares del informe anual, á fin de que puedan ser distribuidos por la Oficina.

Soy del Señor Secretario de Estado muy atento y seguro servidor.

FREDERIC EMORY,
Director.

Al Señor SECRETARIO DE ESTADO.

ACTA DE LA SESIÓN DE LA COMISIÓN EJECUTIVA DE LA UNIÓN INTERNACIONAL DE REPÚBLICAS AMERICANAS, QUE SE VERIFICÓ EL SÁBADO, 17 DE DICIEMBRE DE 1898.

WÁSHINGTON, D. C., *17 de diciembre de 1898.*

La Comisión Ejecutiva de la Unión Internacional de Repúblicas Americanas se reunió en el salón de recepciones del Departamento de Estado el sábado, 17 de diciembre de 1898, á las 11 de la mañana.

Presidió la reunión el Honorable JOHN HAY, Secretario de Estado, como Presidente de la Comisión.

Los otros miembros que estuvieron presentes fueron:

El Señor Dr. Don MARTÍN GARCÍA MÉROU, Ministro de la República Argentina.

El Señor Don JOAQUÍN BERNARDO CALVO, Ministro de Costa Rica.

El Señor Don MANUEL M. PONTE, Encargado de Negocios de Venezuela.

El Director de la Oficina de las Repúblicas Americanas, Mr. EMORY, también estuvo presente.

Habiendo manifestado la Comisión que estaba lista para oir el informe anual del Director de la Oficina, éste lo leyó, después de lo cual explicó los puntos principales relativos á la cuestión económica, y lo hizo como sigue:

En la primera página se dan las entradas y salidas durante le año económico que terminó el 30 de junio de 1898. El 5 de febrero de 1898 me hice cargo de la Oficina, y el cuadro detallado que aparece en la próxima página muestra cómo se gastó el dinero durante el resto del año económico. En la página tercera aparece un cuadro de las entradas y salidas desde el 1° de julio de 1898 hasta el 30 de noviembre del mismo año, y es importante dicho cuadro porque muestra la actual condición de la Oficina y sus recursos. La suma fijada para los gastos anuales fué de $36,000, y aquellos ascendieron á $19,430.79, quedando así el 1° de diciembre de 1898 un saldo de $16,569.21. Las entradas por anuncios y ventas del Directorio Comercial y otras publicaciones, arrojaron un total durante este período, desde el 1° de julio hasta el 30 de noviembre, de $17,812.35, y los gastos subieron á $16,078.85, dejando un saldo de $1,733.50. A esta suma he agregado el valor de los anuncios hasta el 1° de diciembre de 1898, $16,500, y el de cuentas no colectadas, $8,000, lo cual arroja un total á favor de la Oficina de $42,802.71 el 1° de diciembre de 1898. En el cuadro número cuatro se exponen minuciosamente los gastos hechos por mí desde el 1° de julio hasta el 1° de diciembre, y allí aparece una partida de lo que se debía por comisiones según contrato antes del 1° de marzo de 1898, lo cual quiere decir que esas sumas se adeudaban cuando aun no estaba á mi cargo la

Oficina, y he estado pagándolas del mejor modo que me ha sido posible.

El Ministro de la República Argentina, Señor MÉROU, dijo: Encontramos muy satisfactorio el informe de Mr. EMORY y podemos aprobarlo en su totalidad. Es muy grata la noticia de que el Gobierno de Chile puede entrar en la Unión con los otros países latino-americanos, haciéndola así completa. Creo que quizá convendría hacer constar en el acta una manifestacíon del placer que la Comisión siente con este motivo.

El Ministro de Costa Rica, Señor CALVO, dijo: Me adhiero en absoluto á la moción del Señor Ministro de la República Argentina, y espero que se autorizará al Director para que exprese al Señor Ministro de Chile los sinceros deseos que tiene la Comisión de que la República de Chile entre á formar parte de la Unión.

El Señor PRESIDENTE dijo: De acuerdo con los deseos de la Comisión, el Director se servirá comunicar al Ministro de Chile que la posibilidad de que su país entre á formar parte de la Unión es motivo de complacencia para la Comisión.

Después de esto, se aprobó el informe y se dieron instrucciones al Director para que tomase las medidas de contumbre á fin de que dicho documento fuese enviado al Congreso de los Estados Unidos.

Se levantó la sesión.

INFORME ANUAL

OFICINA DE LAS REPÚBLICAS AMERICANAS,
Wáshington, 17 de diciembre de 1898.

Al Señor Secretario de Estado, Presidente de la Comisión Ejecutiva de la Unión Internacional de Repúblicas Americanas, y á los otros Miembros de dicha Comisión.

SEÑORES: Tengo la honra de someter á vuestra consideración el informe relativo á los trabajos de la Oficina de las Repúblicas Ame-

ricanas desde que fuí designado para hacerme cargo de ella con motivo de la muerte del último Director, Mr. JOSEPH P. SMITH, acaecida el 5 de febrero de 1898. La prematura muerte de Mr. SMITH, que había estado de Director menos de un año, privó á la Oficina de sus servicios, y puso término á la ejecución de sus proyectos, en parte realizados, y que tendían á hacer de más alcance y utilidad práctica los trabajos que la Conferencia Internacional Americana tuvo en mira cuando creó la Oficina en 1890. Lo que Mr. SMITH se proponía está explicado con toda claridad en el informe anual que fué preparado según sus instrucciones, pero que él no tuvo tiempo de aprobar, informe que yo presenté á la Comisión el 28 de febrero próximo pasado, por razón de que, según lo manifesté en mi comunicación de aquella fecha, contenia en sustancia sus ideas. Este informe contiene un resumen cuidadosamente preparado sobre los trabajos de la Oficina hasta la época en que fuí nombrado por el Secretario de Estado, y con la aprobación de la Comisión Ejecutiva, Director interino.

Por orden del Congreso de los Estados Unidos, el informe ha sido impreso, y es inútil, por tanto, que yo repita las conclusiones á que llega aquel documento. Me es satisfactorio, sin embargo, poder asegurar que, en cuanto me ha sido posible, bajo las condiciones en que encontré la Oficina, he podido realizar los planes á que el finado Director daba mayor importancia. Entre estos proyectos, figuraba la terminación del Directorio Comercial de las Repúblicas Americanas, obra en dos tomos, y que contiene 2,643 páginas de bien escogida materia descriptiva y estadística, en las que se exponen las riquezas naturales, industrias, comercio y leyes que afectan la agricultura y el tráfico en todos los países del hemisferio occidental, y se dan listas de comerciantes é industriales á quienes se supone especialmente interesados en el desarrollo de las relaciones comerciales entre las diferentes naciones. El segundo tomo, que contiene 1,589 páginas, fué terminado en noviembre de 1898, y se dió principio á la distribución de ejem-

plares el 24 del mismo mes, ó sea cosa de un año después de la publicación del tomo primero. Esta obra, que fué proyectada en su totalidad por el finado Director, se considera como única, tanto por su alcance, como por la exactitud de los informes que contiene, y se cree que llegará á ser de gran valor práctico á las casas de comercio que se dedican ó están para dedicarse al tráfico con la América latina, al mismo tiempo que servirá como obra de consulta á todos los que buscan informes relativos al desarrollo industrial y comercial de las Repúblicas americanas y de las colonias europeas en el mar de las Antillas y en otros puntos de este hemisferio. La Oficina está especialmente agradecida á la Asociación Nacional de Manufactureros y al Museo Comercial de Filadelfia por las importantes indicaciones que le han hecho y por la ayuda que le han prestado en la compilación de listas de casas de comercio para aquella parte del segundo tomo del Directorio Comercial dedicada á los Estados Unidos.

Otro de los objetos que el finado Director se proponía especialmente alcanzar, según se ve por su informe anual, era que la Oficina se recomendase por sí misma á las casas de comercio de las Repúblicas americanas como un agencia importante para remover los obstáculos que se oponen al establecimiento de relaciones mercantiles más estrechas con los Estados Unidos, así como para abrir nuevos mercados al tráfico. Me causa placer poder asegurar que se han hecho progresos en este sentido, y que puedo repetir con énfasis estas palabras del finado Director en su informe anual para 1897: "La Oficina debe gran parte de su reciente desarrollo á la activa participación y á la vigilancia de los representantes en Wáshington de las varias repúblicas interesadas en ella." Al terminar el año de 1898, la Oficina se encuentra en una posición muy halagadora, pues cuenta con el apoyo unánime y cordial de los representantes diplomáticos de todos los países que componen la Unión, y abriga la esperanza de que las Repúblicas latino-americanas continuarán manifestando cada día creciente

interés en sus trabajos. Estas esperanzas se justifican con las numerosas manifestaciones de aprecio y simpatía existentes en los archivos de la Oficina. Un incidente muy grato, y que vino á corroborar esta manera de ver las cosas, fué la reciente visita que hizo á la Oficina el Señor Presidente de Costa Rica, quien, después de haber examinado los trabajos de la misma, manifestó que merecían su aprobación y que era su propósito contribuir, en cuanto le fuese posible, al desarrollo de dicha Oficina.

La Oficina siente también especial agradecimiento hacia el Señor ROMERO, Ministro de México, que formó parte de la Comisión Ejecutiva, y que al separarse de ella en el mes de junio próximo pasado, de conformidad con la disposición que prescribe que cada año cese en sus funciones uno de los miembros de dicho cuerpo, continuó siempre manifestando el mayor interés en los asuntos de la Unión Internacional. Asimismo está muy reconocida la Oficina al ex-Ministro del Brasil en los Estados Unidos, Señor MENDONÇA, quien desde que ella fué organizada, la favoreció con sus indicaciones y con su apoyo más decidido. El Señor Don CARLOS MORLA VICUÑA, últimamente nombrado Ministro de Chile en los Estados Unidos, ha honrado á la Oficina con manifestaciones que prueban el interés que toma en sus trabajos. Esto hace esperar que el Gobierno chileno, que, á pesar de haber estado representado en la Conferencia Internacional Americana que creó la Oficina, jamás ha querido hacer uso de su derecho de entrar en la Unión, se decidirá en día no lejano á prestar á la Oficina su eficaz apoyo.

Según tuve la honra de informar á la Comisión en la sesión del 28 de febrero de 1898, encontré los negocios de la Oficina en algún desorden cuando me hice cargo de ella, lo cual fué resultado de la larga enfermedad del último Director. La situación económica no era satisfactoria, debido á un contrato que había celebrado, con autorización de la Comisión, el predecesor del último Director, en noviembre de 1896. El fin que la Comisión se propuso al

aprobar este convenio, fué obtener fondos para la Oficina por medio de anuncios en el BOLETÍN MENSUAL de la misma, en orden á hacer frente á los gastos ocasionados por esta publicación, mejorarla y aumentar su circulación, teniendo en mira dar á conocer á los diferentes países los recursos, industrias y comercio de cada uno. De conformidad con el contrato, la persona encargada de solicitar anuncios debía recibir por su comisión el 40 por ciento del valor de los que obtuviese. Como base para el buen éxito de esta operación, se hizo imprimir durante algunos meses una edición del BOLETÍN MENSUAL con un costo de $9,000 cada mes, ó sean $108,000 al año. La entrada total producida anualmente por los avisos fué calculada en $60,000, pero de esta suma había que sacar el 40 por ciento para el pago de la comisión, lo cual dejaba reducida aquélla á $36,000.

Como el pago de las comisiones se hacía inmediatamente, y era preciso esperar para el reembolso la recolección del valor de los avisos, era evidente que, aunque la supuesta entrada hubiera sido suficiente, se necesitaba disponer de considerable capital para hacer frente á aquellos desembolsos. La cantidad fijada para los gastos de la Oficina no era más que de $28,000, y el aumento de sus trabajos hacía indispensable que se empleara considerable número de personas, además de las que ya estaban en servicio. El Congreso de los Estados Unidos votó, en enero de 1898, la cantidad de $41,972 para cubrir el déficit. En esa fecha la Oficina estaba atrasada en el pago de los sueldos y de numerosas reclamaciones procedentes de sus operaciones económicas, así como del aumento en los trabajos ocasionado por la necesidad de compilar, traducir, copiar con la máquina de escribir, etc., los datos requeridos para varias publicaciones. Era claro que el saldo que quedara de la suma votada para cubrir el déficit apenas podía bastar para estos gastos y para llevar á buen término los trabajos comenzados.

En estas circunstancias, indiqué á la Comisión Ejecutiva la conveniencia de poner fin al contrato para solicitar anuncios

mediante el pago de una agencia con este fin, máxime en vista de las quejas procedentes de varias partes contra la competencia que los agentes de una Oficina, sostenida en parte por el Gobierno de los Estados Unidos, hacían á empresas particulares que se dedicaban al negocio de los anuncios. Por otra parte, parecía posible llevar á cabo el pensamiento de la Comisión Ejecutiva relativo á obtener una entrada para hacer frente á los gastos del BOLETÍN MENSUAL, con seguir ofreciendo sus columnas á los comerciantes é industriales, como un medio para dar á conocer sus efectos en los mercados adonde deseen enviarlos, y esto sin la mediación de personas que especulan, más ó menos, en esta clase de negocios, y sin hacer indebida competencia á empresas particulares. La Comisión Ejecutiva aceptó mis indicaciones, y me nombró Director de la Oficina por un período que no debía pasar del fin del año económico en curso, esto es, del 30 de junio de 1898, y me dió amplia autorización para reorganizar la Oficina, cancelar los contratos celebrados con el fin de solicitar anuncios ó suscripciones, ú otros que me pareciesen nocivos á los intereses de la Oficina, "teniendo siempre en mira los intereses generales de la Unión Internacional y los deseos de la Comisión."

Con esta autorización, dí inmediatamente aviso de estar terminado el contrato para solicitar anuncios, y procedí á reorganizar la Oficina, de modo á conciliar sus asuntos comerciales, que estimaba valiosos, con las limitaciones impuestas por su carácter oficial y con los medios de que se podía disponer.

El 21 de mayo de 1898 tuve la satisfacción de poner en conocimiento de la Comisión que las medidas económicas adoptadas habían dado por resultado una reducción en cosa de $5,000 mensuales de los gastos que se hacían cuando tomé á mi cargo la Oficina, y asimismo le manifesté que abrigaba la esperanza de que los fondos que había disponibles fuesen suficientes para llevar adelante los trabajos hasta la conclusión del año económico, el día 30 de junio de 1898. Mis esperanzas se realizaron, y al fin del citado

año quedaba un saldo de $702.78. Las recomendaciones que hice á la Comisión Ejecutiva en el informe que presenté en la sesión del 21 de mayo, fueron aceptadas.

El 25 de junio de 1898 se verificó otra sesión de la Comisión Ejecutiva, y en ella manifesté que se acercaba el día 30 de junio, fecha fijada para la expiración de mi período como Director provisional. Creyendo la Comisión que no era oportuno, bajo las condiciones entonces existentes, el nombramiento de un Director permanente, resolvió prolongar mi período como Director provisional hasta el 1° de octubre, y de nuevo me confirió los poderes especiales que me había dado el 28 de febrero. En las sesiones de la Comisión Ejecutiva del 17 de setiembre y del 26 de octubre de 1898, fué prolongado nuevamente el citado período.

En esta última sesión se resolvió que la administración provisional de la Oficina continuara con carácter indefinido, á fin de que la Comisión no se viese obligada á emitir otra resolución sobre el particular, antes de que se hubiesen realizado los proyectos que están en vía de ejecución para el desarrollo de los trabajos sobre bases más económicas.

Los esfuerzos de la dirección provisional han sido dedicados necesariamente, en proporción considerable, á los trabajos de reorganización, á completar los planes del anterior Director, al pago de deudas, y al arreglo de un gran número de cuestiones consecuentes al cambio de método en la conducción de los asuntos de la Oficina. Se consideró conveniente no sólo arreglar los asuntos de la Oficina, sino demonstrar también la practicabilidad de aumentar su esfera de acción obteniendo al efecto mayores ingresos por concepto de anuncios y venta de publicaciones, evitando de esta suerte la necesidad de acudir otra vez al Congreso de los Estados Unidos en solicitud de un presupuesto adicional. Abrigábase la esperanza de poder obtener este resultado sin afectar indebidamente los derechos de las personas ocupadas en la publicación de anuncios ó de las casas editoriales. El método empleado

para la obtención de anuncios dentro de estos límites está ampliamente explicado en el aviso que se publica en el BOLETÍN MENSUAL desde el 5 de febrero último. Los resultados abonan la esperanza de que la Oficina recibirá el apoyo pecuniario de las casas de comercio de importancia que tienen marcado interés en el desarrollo de las relaciones comerciales entre las varias Repúblicas americanas, y justifican asimismo la esperanza de que en no lejano día el BOLETÍN pueda sostenerse por sí mismo sin necesidad de agencia en comisión y el consiguiente anticipo de dinero á cargo de los ingresos por concepto de anuncios.

Los contratos de anuncios han sido renovados en cantidad de $4,961 y se han hecho nuevos contratos por $1,018. Estos resultados, aunque pequeños en proporción al importe bruto obtenido bajo el sistema anterior, son sustancialmente alentadores por cuanto han sido obtenidos sin indebida solicitud y dejarán en beneficio de la Oficina una utilidad igual á su importe. No abrigo duda alguna de que la continuación de la conducta actual respecto á los anuncios dará por resultado, dentro de un período relativamento corto, un aumento en la circulación del BOLETÍN, un gran adelanto en el carácter de las materias contenidas en el mismo, y el mantenimiento de esta publicación independientemente de la cantidad presupuesta por el gobierno. La distribución gratuita del BOLETÍN en los Estados Unidos ha ocasionado gastos que, á mi juicio, no estaban justificados por los recursos de la Oficina, y la circulación libre está limitada ahora á los periódicos, cámaras de comercio, bibliotecas, funcionarios del gobierno y personas que soliciten informes específicos. En las actuales condiciones he encontrado justificable pedir al Congreso de los Estados Unidos que disponga la publicación de 5,000 números mensuales para el año económico próximo que termina al 30 de junio de 1900, con el objeto de distribuirlos en este país como medio de propagar un conocimiento mejor de las fuentes de riqueza y posibilidades comerciales de las Repúblicas latino-americanas.

Una edición de 8,000 números es distribuida en México, Centro América, Sud América y las Antillas; y el costo de esta edición, así como el de los números que ahora se están distribuyendo en los Estados Unidos, puede sufragarse á mi juicio con los ingresos probables por concepto de anuncios.

Además de la publicación del BOLETÍN, los trabajos de la Oficina comprenden la compilación é impresión, de cuando en cuando, de manuales sobre los diversos países latino-americanos. Cuatro de estos manuales han sido terminados, y sólo espero contar con los medios de sufragar su costo de impresión y distribución para darles publicidad. El anterior Director llamó la atención en su informe hacia el hecho de que los presupuestos para el sostenimiento de la Oficina no han sido nunca suficientes á sufragar los gastos de impresión de varios trabajos cuya publicación debía llevarse á cabo dentro de los límites de la esfera de acción de la Oficina, tal como fué ideada por la Conferencia Internacional, especialmente por cuanto todos estos documentos deben imprimirse en el idioma del país á que se refieren, de igual suerte que en inglés. Sobre este punto el anterior Director se expresó en los siguientes términos:

> Si se practica un examen de investigación, se verá que los anteriores Directores de la Oficina se vieron obligados á acudir á varios expedientes para llevar á cabo la impresión de los trabajos que han sido publicados de cuando en cuando. Habría sido imposible hacerlo con los fondos que tenían á su disposición. Sólo pudo hacerse por virtud de la autorización que se obtuvo del Congreso de los Estados Unidos para imprimir los varios manuales y otras publicaciones, como documentos del Congreso, á cargo del fondo general para impresos.

Como medio de vencer esta dificultad, en parte al menos, el anterior Director sugirió la idea á los representantes de los países que componen la Unión Internacional, de que se tomaran "medidas al objeto de obtener para la Oficina el uso de las cantidades con que contribuyen las otras Repúblicas, cuyos importes se pagan actualmente en la Tesorería de los Estados Unidos, para reembolsar á ésta por el anticipo de las diferentes cuotas de aquellos países." Se calculó que esta medida daría un ingreso á la Oficina de unos

$45,000 ó $50,000. Yo he dado pasos para llevar á la práctica esta sugestión, y se ha pedido al Congreso de los Estados Unidos la autorización de este proyecto. Se han dirigido comunicaciones á los gobiernos de los otros países de la Unión Internacional preguntándoles si se les ofrece objeción alguna respecto del cambio propuesto, y cuatro de ellos han contestado ya manifestando su aquiescencia. Las cantidades que se han recibido de los otros países han variado de año á año, pero tengo el placer de consignar que hay fundamentos sustanciales para esperar que las cuotas de este año excedan con mucho al promedio anual. La Oficina ha sido informado del pronto pago de las cuotas correspondientes á cinco de aquellos países, cuyo total asciende á $5,027.78. Uno de ellos, Venezuela, ha pagado la cantidad de $540.41 en exceso durante el año económico terminado el 30 de junio de 1898. Aquella cantidad excede al total de importes recibidos de los otros países de la Unión en el año económico anterior, que fué de $4,216.02

Además de sus varias publicaciones, la Oficina se ocupa activamente en suministrar informes, ya verbalmente, ya por escrito, á los que los solicitan, no sólo en los Estados Unidos, sino también en muchas otras partes del mundo, especialmente en los países de la Unión Internacional Americana. Este ramo de los trabajos de la Oficina ha alcanzado tales proporciones, que el anterior Director hubo de establecer una sección de información con el objeto especial de dar contestación á las solicitudes de informes. Estas han continuado aumentando en número, y la Oficina recibe con frecuencia cartas de los otros países de la Unión, en las cuales se solicita su auxilio al objeto de obtener informes en asuntos comerciales, ó de interesar el capital americano en empresas mineras, industriales ó comerciales en los diversos países. Muchas de las cartas se refieren en términos laudatorios al BOLETÍN MENSUAL de la Oficina, hecho que indica que esta publicación se está distribuyendo con resultados satisfactorios en los países latinoamericanos y que se está dando á conocer como medio práctico de fomentar el comercio. La Oficina responde á las solicitudes

de los iniciadores de empresas especiales en busca de capital americano, llamando solamente la atención á tales empresas en las páginas del BOLETÍN, después de convencerse, tras cuidadosa investigación, de que propiamente puede darse publicidad á tales proyectos. En los casos en que la Oficina no puede prestar ayuda alguna, se sugiere á los solicitantes que acudan á las corporaciones comerciales de los Estados Unidos que estén comprendidas más especificadamente dentro del campo de acción que interesa al solicitante.

Las preguntas que generalmente se hacen, se refieren á las fuentes especiales agrícolas y mineras de los varios países; á la manera de obtener tierras para el cultivo, para la cría de ganado, y para la minería; los métodos empleados para la fabricación de azúcar y producción de café, cacao, goma elástica, frutas tropicales, etc., y las medidas que se han de tomar para adquirir tierras, ya sea para la aplicación de la actividad privada ó para llevar á cabo empresas en una escala más comprensiva. Con frecuencia se piden informes acerca de los derechos impuestos en las aranceles de los diversos países sobre artículos ó clases especiales de mercancías, derechos de entrada y ordenanzas de puertos, estadísticas de exportación é importación, condiciones impuestas por las leyes de un país respecto á las industrias y al comercio, nombres de los funcionarios del gobierno á quien hay que dirigirse en asuntos especiales, etc. De los países latino-americanos vienen, en número creciente, solicitudes de informes sobre los mercados de los Estados Unidos con relación á ciertos productos de aquellos países y á las clases de artículos que se producen ó fabrican en los Estados Unidos, que pudieran tomarse en cambio, los nombres de los importadores y exportadores interesados en el comercio latino-americano, y otros particulares que acusan un grande deseo de cultivar relaciones más estrechas.

En cumplimiento de la recomendación hecha por el anterior Director en su informe á la Comisión Ejecutiva en febrero último, la Oficina fué representada—exhibiendo al efecto sus trabajos—en la

Exposición Internacional Transmisisipiana de Omaha, Nebraska, la cual se cerró el 31 de octubre último. En el BOLETÍN de noviembre de 1898, páginas 777–779, se encontrará un informe presentado por el agente de la Oficina en aquella Exposición. En este informe se indica que la exhibición hecha por la Oficina vino á llenar un objeto útil, no sólo haciendo conocer más extensamente al pueblo de los Estados Unidos la utilidad de la Oficina, sino también atrayendo la atención hacia las posibilidades comerciales é industriales de México, Centro y Sud América, y las Indias Occidentales. El anterior Director sugirió también la idea de que la Oficina fuese representada en la Exposición de París de 1900, así como en las exposiciones que hayan de celebrarse en los distintos países de la Unión Internacional. Como mi cargo de Director es meramente provisional, no he encontrado justificable el tomar medidas para llevar á cabo estas recomendaciones, pero las someto respetuosamente á la consideración de la Comisión Ejecutiva.

Acompaño un informe sobre la situación económica de la Oficina durante el año económico que terminó el 30 de junio de 1898, y que comprende también el período transcurrido desde la fecha en que me hice cargo de la Oficina, en 5 de febrero último hasta el 1 del corriente; acompaño también los números del BOLETIN MENSUAL publicados durante el pasado año económico, en los cuales se da cuenta sucesivamente de los trabajos realizados por la Oficina.

Es objeto de gran placer para mí reiterar en mi propio nombre las expresiones de reconocimiento que el anterior Director hizo presente á la Comisión Ejecutiva, y que yo extiendo á los representantes de todos los países de la Unión Internacional por su valiosa cooperación en el manejo de los trabajos de la Oficina y su cordial apoyo de los fuerzos hechos para aumentar su utilidad.

Tengo la honra de ser vuestro atento servidor,

FREDERIC EMORY,

Director.

INGRESOS

Del 1º de julio de 1897 al 30 de junio de 1898.

Presupuesto:		
Anual, 1898	$28,000.00	
Adicional, 1898	41,972.00	
		$69,972.00
Anuncios		32,051.41
Por concepto de ventas:		
Directorio Comercial	16,681.50	
Otras publicaciones	5.904.14	
		22,585.64
Total		124,609.05
Gastos		123,906.27
Balance el 1º de julio 1 de 1898		702.78

GASTOS

Del 1º de julio de 1897 al 30 de junio de 1898.

	Pagado por el Oficial pagador del Departamento de Estado.		Pagado por el Director de la Oficina* del fondo de los productos de ventas, rentas, etc.	Total.
	Del presupuesto de 1899.	De los ingresos por concepto de ventas, rentas, etc.		
Sueldos	$37,999.69	$8,184.58	$3,908.16	$50,092.43
Artículos de escribir	6,968.95	964.69	781.00	8,714.64
Alquiler de la Oficina	1,666.66	833.35	.....	2,500.01
Comisiones	5,884.70	5,200.00	13,105.80	24,190.50
Gastos de la Oficina de Nueva York	360.83	553.43	2,065.63	2,979.89
Máquinas de Escribir	1,086.07	.....	.....	1,086.07
Muebles, reparaciones, etc.	1,191.65	165.79	.....	1,357.44
Sellos de correo	778.00	.....	450.00	1,228.00
Biblioteca	89.12	241.61	100.60	431.33
Cablegramas y telegramas	731.62	127.91	96.46	955.99
Impresión	7,636.01	11,773.94	1,000.00	20,409.95
Mapas	2,714.34	.....	206.25	2,920.59
Teléfono	263.96	62.50	.....	326.46
Otros	2,547.44	2,314.45	1,851.08	6,712.97
Total	69,919.04	30,422.25	23,564.98	123,906.27

* No se ha hecho pago alguno por el Director desde 5 de febrero de 1898, con excepción de los recibos expedidos contra el oficial pagador del Departamento de Estado, para su pago de los fondos del presupuesto, ó de los ingresos por concepto de ventas, rentas, etc., que se depositan inmediatamente en la tesorería de los Estados Unidos.

Del 5 de febrero de 1898 al 30 de junio de 1898.

	Pagado por el oficial pagador del Departamento de Estado, presupuesto de 1898.	Pagado por el oficial pagador, ingresos, etc.	Total.
Sueldos	$19, 476. 57	$514. 61	$19, 991. 18
Artículos de escribir	3, 666. 10	13. 69	3, 679. 79
Alquiler de oficina	666. 66	333. 34	1, 000. 00
Comisiones por contratos hechos con anterioridad al 1 de marzo de 1898	.....	5, 200. 00	5, 200. 00
Gastos de la oficina de Nueva York	335. 83	553. 45	889. 28
Muebles	555. 61	.....	555. 61
Biblioteca	32. 12	145. 69	177. 81
Cablegramas y telegramas	602. 80	.....	602. 80
Impresión	6, 142. 38	10, 750. 26	16, 892. 64
Mapas	2, 347. 50	.....	2, 347. 50
Teléfono	97. 02	.....	97. 02
Otros	1, 522. 28	1, 684. 97	3, 207. 25
Total	35, 444. 87	19, 196. 01	54, 640. 88

Total de ingresos y gastos del 1° de julio de 1898 al 30 de noviembre de 1898.

Presupuesto anual, 1899			$36, 000. 00		
Gastos			19, 430. 79		
Balance, 1° de diciembre de 1898					$16, 569. 21
Ingresos por concepto de ventas, rentas, etc.:					
Balance, 1° de julio de 1898				649. 82	
Por concepto de anuncios		$16, 444. 70			
Por ventas:					
Directorio Comercial	$260. 00				
Otras publicaciones	457. 83				
		717. 83			
				17, 162. 53	
			17, 812. 35		
Gastos			16, 078. 85		
Balance, 1° de diciembre de 1898					1, 733. 50
Valor de los anuncios, 1° de diciembre de 1898					16, 500. 00
Cuentas no cobradas					8, 000. 00
Total de ingresos de la Oficina, 1° de diciembre de 1898					42, 802. 71

GASTOS.

Del 1º de julio de 1898 al 30 de noviembre de 1898.

	Del presupuesto anual de 1899.	De los ingresos por ventas, rentas, etc.	Total.
Sueldos	$14, 830. 44	$2, 743. 54	$17, 573. 98
Artículos de escribir	85. 80	52. 41	138. 21
Alquiler	833. 33	.....	833. 33
Impresión	3, 279. 25	9, 456. 36	12, 735. 61
Sellos de correo	153. 17	266. 00	419. 17
Biblioteca	36. 50	11. 25	47. 75
Comisiones por contratos antes del 1º de marzo de 1898	.....	2, 375. 18	2, 375. 18
Teléfono	33. 75	33. 75	67. 50
Otros	178. 55	1, 140. 36	1, 318. 91
Total	19, 430. 79	16, 078. 85	35, 509. 64

RELATORIO

DA

SECRETARIA DAS REPUBLICAS AMERICANAS.

MENSAGEM DO PRESIDENTE DOS ESTADOS UNIDOS REMETTENDO-O AO CONGRESSO.—CARTA DO SECRETARIO DE ESTADO COMPENDIANDO OS RESULTADOS OBTIDOS.

RESTABELECIMENTO DAS RELAÇÕES COM A REPUBLICA ARGENTINA—ENTRADA PROVAVEL DO CHILE NA UNIÃO—RECENTES PROGRESSOS FEITOS NOS TRABALHOS DA SECRETARIA.

O relatorio annual do Director da Secretaria das Republicas Americanas para o anno de 1898 foi remettido, com os documentos annexos, ao Congresso dos Estados Unidos a 6 de Janeiro, acompanhado da seguinte mensagem do Presidente:

Ao Senado e Camara de Deputados:

Remetto juntamente com esta uma communicação do Secretario de Estado que contem o relatorio annual do Director da Secretaria das Republicas Americanas, com os documentos annexos.

Havendo melhorado a condição da Secretaria e prestando esta hoje maiores serviços, segundo o manifestei em minha mensagem annual, e em vista das promessas de que as outras Republicas americanas se interessarão mais em sua manutenção, dou minha sincera approvacão ás recommendações do Secretario de Estado. Estou seguro de que será tão agradavel para o Congresso, como o tem sido para mim, a noticia de que a Republica Argentina

tem resolvido a restabelecer suas relações com a Secretaria, e de que ha esperanças de que a União Internacional Americana, creada pela notavel conferencia dos representantes de nossas republicas irmãs e dos Estados Unidos, que celebrou suas sessões em Washington em 1889–90, chegue a ser completa pela adhesão da Republica do Chile ao pacto que se firmou para a manutenção da Secretaria como orgão da União. Os interesses dos Estados Unidos em levar a effeito os louvaveis desejos da Conferencia Internacional para promover não sómente o commercio mas mais estreitas relações de amizade entre as Republicas deste hemispherio, são tão evidentes, que não duvido que a Secretaria contará com as sympathias e o apoio do Congresso em seu caracter de agencia practica para a realização dos objectos mencionados.

WILLIAM MCKINLEY.

PALACIO EXECUTIVO,
Washington, 6 de Janeiro de 1899.

CARTA DO SECRETARIO DE ESTADO.

Senhor PRESIDENTE:

Tenho a honra de remetter-vos o relatorio annual do Director da Secretaria das Republicas Americanas, que versa principalmente sobre a administração provisoria da Secretaria desde o fallecimento do ultimo director, Mr. JOSEPH P. SMITH, no dia 5 de Fevereiro de 1898. O relatorio foi lido e approvado na reunião da Commissão Executiva da União Internacional das Republicas Americanas, realizada no dia 17 do mez corrente. Observar-se-ha que os esforços do Director provisorio, que é um empregado da Secretaria de Estado, designado no mez de Fevereiro proximo passado, com a approvação da Commissão Executiva, para que se fizesse cargo da Secretario, têm sido dirigidos principalmente á realização dos importantes projectos de seu predecessor, assim como a fazer frente ás difficuldades economicas

produzidas em sua maior parte por operações mercantis a que deu lugar um contrato celebrado pela Commissão Executiva em Novembro de 1896, afim de obter annuncios para o BOLETIM MENSAL, e tambem a conciliar a opposição de algumas emprezas periodisticas e outras á concurrencia que lhes fazia uma Secretaria sustentada, em parte, por verbas votadas pelo Congresso dos Estados Unidos, com os desejos da Commissão Executiva de obter fundos para manter a Secretaria e augmentar devidamente suas operações.

Me é satisfactorio poder assegurar que a administração provisoria tem obtido os fins indicados, e que a Secretaria parece haver entrado em uma via de desenvolvimento que promette a gradual realização dos propositos da Conferencia Internacional Americana de 1889–90, que a estableceu como uma agencia para promover as relações commerciaes e fraternaes entre as varias republicas do hemispherio occidental. Os esforços da Secretaria no passado, segundo se indicou no relatorio annual do Director para o anno de 1897, têm sido necessariamente de caracter mais ou menos experimental, devido ao facto de que o plano traçado pela Conferencia Internacional era novo, tanto em sua concepção como em seu alcance, e para leval-o a effeito havia de resolver muitos problemas complicados. É de esperar que estejamos já andando sobre terreno firme, e nos induz a nutrir essa esperança não só a condição actual da Secretaria e o que promette para o futuro, mas o facto de que as outras republicas da União lhe estão prestando seu apoio cordial e decidido.

Pelo relatorio do Director se vê que o pedido ultimamente feito ás Republicas latinas de que pagassem suas quotas annuaes para a manutenção da Secretaria tem dado em resultado que cinco dellas têm pago uma quantia maior do que toda a somma recebida durante o exercicio anterior. Tambem se observará que alguns dos membros da União Internacional que por alguns annos haviam deixado de figurar nella, manifestam agora desejos de restabelecer

suas passadas relações com a Secretaria, e de volver a contribuir com suas quotas para a manutenção da mesma. Um dos paizes em referencia é a Republica Argentina que acaba de communicar officialmente sua intenção de obrar da maneira indicada. O Director tambem chama a attenção para o interesse que manifesta o Ministro do Chile nos Estados Unidos a respeito da Secretaria, o qual justifica a esperança de que aquella Republica, que foi o unico dos paizes que participaram na Conferencia Internacional Americana que não entrou na União, se resolverá a entrar nella, completando assim a união das republicas americanas, destinada a fazer mais estreitos os laços que as ligam para beneficio de todas.

No momento em que a attenção de todos se dirige com mais interesse que nunca para os mercados que em outras terras se offerecem á industria e ao commercio dos Estados Unidos, é da maior importancia que aproveitemos as numerosas mostras de amizade que nos dão nossos vizinhos do sul com o fim de estabelecer uma permuta de productos e de ajudar-nos mutuamente; e si tomamos em consideração os muitos pontos em que os interesses e aspirações das republicas latino-americanas estão de accordo com os que estão mais profundamente gravados em nossa vida nacional, é evidente que cada passo que tenda a identificar-nos em sympathias e propositos deve contribuir de modo sensivel ao desenvolvimento economico e social, tanto de nossas republicas irmãs como de nos mesmos. Desde o ponto de vista dos serviços que neste sentido pode prestar a Secretaria das Republicas Americanas, o augmento que se dê a seus trabalhos de accordo com as miras dos representantes dos outros paizes que figuram na União Internacional deve, a meu juizo, ser motivo de congratulações, e me permitto indicar que se chame a attenção do Congresso para o facto de que se estão fazendo esforços para economizar e augmentar os recursos da Secretaria para que seja de maior utilidade com o menor custo possivel ao thesouro publico.

Ao meu pedido, o Secretario do Thesouro tem enviado ao Con-

gresso o orçamento da despeza da Secretaria para o proximo exercicio, assim como um projecto de lei para que se permitta á dita Secretaria fazer uso das quantias que se recebam dos outros paizes durante o presente anno fiscal. As razões que se tiveram em mira ao formular este projecto de lei estão expostas nas communicações do Director da Secretaria que acompanham ás que o Secretario do Thesouro tem dirigido á Camara dos Deputados, e espero que o Congresso as estimará justificadas pelas necessidades do caso.

Tenho a honra de apoiar a recommendação do Director de que se peça autorisação ao Congresso para imprimir 2,500 exemplares do relatorio annual, afim de que a Secretaria possa distribuil-os para satisfazer os pedidos de informação que se recebem acerca de sua condição actual e seus planos para o futuro.

Sou de V. S. attento respeitador,

JOHN HAY.

SECRETARIA DE ESTADO.
Washington, 30 de Dezembro de 1898.

CARTA DO DIRECTOR.

SECRETARIA DAS REPUBLICAS AMERICANAS,
Washington, D. C., 21 de Dezembro de 1898.

SENHOR: De conformidade com as instrucções que me foram dadas pela Commissão Executiva da União Internacional das Republicas Americanas, na sessão de 17 do corrente, tenho a honra de rogar-vos que o relatorio que acompanha a esta e que versa sobre os trabalhos da Secretaria das Republicas Americanas durante o anno passado, juntamente com um curto resumo das deliberações da Commissão Executiva na dita sessão, seja submettido ao Senhor Presidente afim de que seja remettido ao Congresso dos Estados Unidos.

Além da noticia, contida no relatorio, de que é possivel que a Republica do Chile dê por primeira vez seu apoio á Secretaria,

me agrada poder manifestar que acabo de ser informado officialmente de que a Republica Argentina, que desde 1891 não tinha contribuido para a manutenção da Secreteria, tem resolvido tomar as medidas necessarias afim de restabelecer suas antigas relações. Este feliz resultado se deve especialmente ao Dr. Don Martín García Merou, Ministro da Republica Argentina em Washington, quem tem sido empenhado em fazer comprehender a seu Governo a importancia crescente da Secretaria.

Afim de poder responder ás perguntas que de muitas partes se me dirigem a respeito da condição e propositos da Secretaria, me permitto recommendar-vos que se peça ao Congresso autorisação para imprimir uma edição de 2,500 exemplares do relatorio annual, afim de que possam ser distribuidos pela Secretaria.

Sou de V. S. muito attento servidor,

Frederic Emory,
Director.

Ao Senhor Secretario de Estado.

ACTA DA SESSÃO DA COMMISSÃO EXECUTIVA DA UNIÃO INTERNACIONAL DAS REPUBLICAS AMERICANAS QUE SE REALIZOU SABBADO, 17 DE DEZEMBRO DE 1898.

Washington, D. C., *17 de Dezembro de 1898.*

A Commissão Executiva da União Internacional das Republicas Americanas reuniu-se na sala de recepção da Secretaria de Estado, Sabbado, 17 de Dezembro de 1898, ás 11 horas da manhã.

A reunião foi presidida pelo Honrado John Hay, Secretario de Estado.

Os outros membros que estiveram presentes foram:

O Sr. Dr. Don Martín García Merou, Ministro da Republica Argentina.

O Sr. Don Joaquim Bernardo Calvo, Ministro de Costa Rica.

O Sr. Don Manuel M. Ponte, Encarregado de Negocios de Venezuela.

O Director da Secretaria das Republicas Americanas, Mr. EMORY, tambem esteve presente.

Havendo manifestado a Commissão que estava prompta para dar principio á sessão, o Director leu o relatorio annual da Secretaria, depois do qual explicou os pontos principaes relativos á questão economica, e o fez como segue:

Na primeira pagina se dá conta da receita e despeza durante o exercicio findo em 30 de Julho de 1898. No dia 5 de Fevereiro de 1898 encarreguei-me da administração da Secretaria, e o quadro detalhado que apparece na proxima pagina mostra como se gastou o dinheiro durante o resto do exercicio. Na pagina terceira apparece um quadro da receita e despeza desde o dia 1° de Julho de 1898 até o dia 30 de Novembro do mesmo anno, e esse quadro é importante porque mostra a actual condição da Secretaria e seus recursos.

A verba votada para os gastos annuaes foi de $36,000, e aquelles ascenderam a $19,430.79, ficando assim no dia 1° de Dezembro de 1898 um saldo de $16,569.21. A receita proveniente de annuncios e vendas do Directorio Commercial e outras publicações, durante este periodo, desde o 1° de Julho até o 30 de Novembro, foi de $17,812.35, e ás despezas subiram a $16,078.85, deixando um saldo de $1,733.50. A esta somma tenho aggregado o valor dos annuncios até o 1° de Dezembro de 1898, $16,500, e o de contas não collectadas, $8,000, o qual mostra um total a favor da Secretaria de $42,802.71, no dia 1° de Dezembro de 1898. No quadro numero quatro se expõem minuciosamente os gastos feitos por mim desde o 1° de Julho até o 1° de Dezembro, e alli apparece uma parcella—commissões segundo contrato antes do 1° de Março de 1898—o qual quer dizer que essas sommas estavam contrahidas quando ainda não estava á meu cargo a Secretaria, e tenho estado pagando-as do melhor modo que me tem sido possivel.

O Ministro da Republica Argentina, Senhor MÉROU, disse: Encontramos muito satisfactorio o relatorio de Mr. EMORY e podemos approval-o em sua totalidade. Causa muita satisfação a noticia de que o Governo do Chile pode entrar na União com os outros paizes latino-americanos, fazendo-a assim completa. Creio que talvez seria conveniente fazer constar na acta uma manifestação do prazer que a Commissão sente com este motivo.

O Ministro de Costa Rica, Senhor CALVO, disse: Approvo a indicação do Sr. Ministro da Republica Argentina, e espero que se autorisará ao Director para que exprima ao Sr. Ministro do Chile os sinceros desejos que tem a Commissão de que a Republica do Chile entre a formar parte da União.

O Sr. PRESIDENTE disse: De accordo com os desejos da Commissão, o Director se servirá a communicar ao Ministro do Chile a satisfação que sente a Commissão ao receber a noticia de que este paiz possa entrar na União.

Depois disto, o relatorio foi approvado e se deram instrucções ao Director para que tomasse as medidas de costume afim de que o dito documento fosse enviado ao Congresso dos Estados Unidos.

Levantou-se a sessão.

RELATORIO ANNUAL.

SECRETARIA DAS REPUBLICAS AMERICANAS,
Washington, 17 de Dezembro de 1898.

Ao Sr. Secretario de Estado, Presidente da Commissão Executiva da União Internacional das Republicas Americanas, e aos outros membros da dita Commissão:

SENHORES: Tenho a honra de submetter a vossa consideração o relatorio relativo aos trabalhos da Secretaria das Republicas Americanas desde que fui designado para encarregar-me da administração della com motivo do fallecimento do ultimo Director,

Mr. JOSEPH P. SMITH, a 5 de Fevereiro de 1898. A prematura morte de Mr. SMITH, que tinha estado Director menos de um anno, privou á Secretaria de seus serviços, e poz termo á execução de seus projectos, em parte realizados, e que tendiam a fazer de mais alcance e utilidade pratica os trabalhos que a Conferencia Internacional Americana teve em vista quando estabeleceu a Secretaria em 1890. O que Mr. SMITH se propunha está explicado com toda claridade no relatorio annual que foi preparado segundo suas instrucções, mas que elle não teve tempo de approvar, relatorio que eu apresentei á Commissão a 28 de Fevereiro proximo passado, por razão de que, segundo o manifestei em minha communicação daquella data, continha em substancia suas ideas. Este relatorio contem um resumo cuidadosamente preparado sobre os trabalhos da Secretaria até a epoca em que fui nomeado pelo Secretario de Estado, e com a approvação da Commissão Executiva, Director interino.

Por ordem do Congresso dos Estados Unidos, o relatorio tem sido impresso, e é inutil, portanto, que eu repita as conclusões a que chega aquelle documento. Me é satisfactorio, sem embargo, poder assegurar que em quanto me tem sido possivel, sob as condições em que encontrei a Secretaria, tenho podido realizar os planos a que o finado Director dava maior importancia. Entre estes projectos, figurava a conclusão do Directorio Commercial das Republicas Americanas, obra em dous volumes, e que contem 2, 643 paginas de bem escolhida materia descriptiva e estatistica, nas quaes se expõem as riquezas naturaes, industrias, commercio e leis que se referem á agricultura e ao commercio em todos os paizes do hemispherio occidental, e se dão listas de commerciantes e industriaes especialmente interessados no desenvolvimento das relações commerciaes entre as differentes nações.

O segundo volume, que contem 1,589 paginas, foi publicado em Novembro de 1898, e se deu principio á distribuição de exemplares a 24 do mesmo mez, ou um anno depois da publicação do

primeiro volume. Esta obra que foi projectada em sua totalidade pelo finado Director, é considerada como unica, tanto por seu alcance como pela exactidão das informações que contem, e se crê que chegará a ser de grande valor pratico ás casas de commercio que se dedicam ao commercio com a America Latina, ao mesmo tempo que servirá como obra de referencia a todos os que procuram informações relativas ao desenvolvimento industrial e commercial das Republicas Americanas e das colonias europeas no mar das antilhas e em outros pontos deste hemispherio. A Secretaria está especialmente agradecida á Associação Nacional de Manufactureiros e ao Museu Commercial de Philadelphia pelas importantes indicações que lhe têm feito e pela ajuda que lhe tem prestado na compilação de listas de casas de commercio para aquella parte do segundo volume do Directorio Commercial dedicada aos Estados Unidos.

Outro dos fins que o finado Director se propunha especialmente alcançar, segundo se vê por seu relatorio annual, era que a Secretaria se recommendasse por si mesma ás casas de commercio das republicas americanas como uma agencia importante para remover os obstaculos que se oppõem ao estabelecimento de relações mercantis mais estreitas com os Estados Unidos, assim como para abrir novos mercados ao commercio. Tenho muita satisfação em poder dizer que se têm feito progressos neste sentido e que posso repetir com emphasis estas palavras do finado Director em seu relatorio annual para 1897: "A Secretaria deve grande parte de seu recente desenvolvimento á activa participação e á vigilancia dos representantes em Washington das varias republicas que della formam parte." Ao terminar o anno de 1898 a Secretaria se encontra em uma posição muito satisfactoria, pois conta com o apoio unanime e cordial dos representantes diplomaticos de todos os paizes que compõem a União, e abriga a esperança de que as republicas latino-americanas continuarão manifestando cada dia crescente interesse em seus trabalhos. Essas esperanças se justifi-

cam com as numerosas manifestações de apreço e sympathia existentes nos archivos da Secretaria. Um incidente muito agradavel, e que veiu a corroborar esta maneira de ver as cousas, foi a recente visita que fez á Secretaria o Senhor Presidente de Costa Rica, quem, depois de haver examinado os trabalhos da mesma, manifestou que mereciam sua approvação e que era seu proposito contribuir em quanto lhe fosse possivel ao desenvolvimento da dita Secretaria.

A Secretaria sente tambem especial agradecimento para com o Senhor Romero, Ministro do Mexico, que formou parte da Commissão Executiva e que ao separar-se della no mez de Junho proximo passado, de conformidade com a disposição que prescreve que cada anno cesse em suas funcções um dos membros do dito corpo, continuou sempre manifestando o maior interesse nos assumptos da União Internacional. Assim mesmo está muito reconhecida a Secretaria ao ex-Ministro do Brazil nos Estados Unidos, Senhor Mendonça, quem desde que ella foi organizada, a favoreceu com suas indicações e com seu apoio mais decidido. O Senhor Don Carlos Morla Vicuña, ultimamente nomeado Ministro do Chile nos Estados Unidos, tem honrado a Secretaria com manifestações que provam o interesse que toma em seus trabalhos. Isto nutre a esperança de que o Governo chileno, que apezar de haver estado representado na Conferencia Internacional Americana que estabeleceu a Secretaria, nunca tem querido fazer uso de seu direito de entrar na União, se decidirá a prestar á Secretaria seu efficaz apoio.

Segundo tive a honra de informar á Commissão na sessão de 28 de Fevereiro de 1898, encontrei os negocios da Secretaria em alguma desordem quando encarreguei-me da administração della, o qual foi resultado da longa enfermidade do ultimo Director. A situação economica não era satisfactoria, devido a um contrato que tinha celebrado, com autorisação da Commissão, o predecessor do ultimo Director, em novembro de 1896. O fim que a Commis-

são se propoz ao approvar este convenio foi obter fundos para a Secretaria por meio de annuncios no BOLETIM MENSAL da mesma, afim de fazer frente aos gastos occasionados por esta publicação, melhoral-a e augmentar sua circulação, tendo em vista dar a conhecer aos differentes paizes os recursos, industrias e commercio de cada um. De accordo com o contrato, a pessoa encarregada de solicitar annuncios devia receber por sua commissão 40 por cento do valor dos que obtivesse. Como base para o bom exito desta operação, se fez imprimir durante alguns mezes uma edição do BOLETIM MENSAL com um custo de $9,000 por mez, ou $108,000 por anno. A renda total produzida annualmente pelos annuncios foi calculada em $60,000, mas desta somma tinha de deduzir 40 por cento para o pagamento da commissão, o qual deixava reduzida aquella a $36,000.

Como o pagamento das commissões se fazia immediatamente, e era preciso esperar para o reembolso a cobrança do valor dos annuncios, era evidente que, ainda que a supposta renda houvesse sido sufficiente, se necessitava dispor de consideravel capital para fazer frente áquelles desembolsos. A quantia fixada para os gastos da Secretaria não era mais que de $28,000, e o augmento de seus trabalhos fazia indispensavel que se empregasse consideravel numero de pessoas, além das que já estavam em serviço. O Congresso dos Estados Unidos votou em Janeiro de 1898, a quantia de $41,972 para cobrir o *deficit*. Nessa data a Secretaria estava atrazada no pagamento dos ordenados e de numerosas reclamações procedentes de suas operações economicas, assim como do augmento nos trabalhos occasionados pela necessidade de compilar, traduzir, copiar com a machina de escrever, etc., os dados requeridos para varias publicações. Era evidente que o saldo que ficava da somma votada para cobrir o *deficit*, apenas podia bastar para estes gastos e para levar a cabo os trabalhos começados.

Nestas circumstancias, indiquei á Commissão Executiva a con-

veniencia de pôr fim ao contrato para solicitar annuncios, mediante o pagamento de uma agencia com este fim, especialmente em vista das queixas procedentes de varias partes contra a concurrencia que os agentes de uma Secretaria, sustentada em parte pelo Governo dos Estados Unidos, faziam a emprezas particulares que se dedicavam ao negocio dos annuncios. Por outra parte, parecia possivel levar a cabo o pensamento da Commissão Executiva relativo á obtenção de uma renda para fazer frente aos gastos do BOLETIM MENSAL, por continuar a offerecer suas columnas aos commerciantes e industriaes, como um meio para dar a conhecer suas mercadorias nos mercados aonde desejarem envial-as, e isto sem a mediação de pessoas que especulam mais ou menos nesta classe de negocios, e sem fazer indevida concurrencia a emprezas particulares. A Commissão Executiva aceitou minhas indicações, e me nomeou Director da Secretaria por um periodo que não devia passar do fim do anno economico em curso, isto é, do dia 30 de Junho de 1898, e me deu amplia autorisação para reorganisar a Secretaria, cancellar os contratos celebrados com o fim de solicitar annuncios ou assignaturas, ou outros que me parecessem nocivos aos interesses da Secretaria, "tendo sempre em vista os interesses geraes da União Internacional e os desejos da Commissão."

Com esta autorisação, dei immediatamente aviso de estar terminado o contrato para solicitar annuncios, e procedi a reorganisar a Secretaria, de modo de conciliar seus assumptos commerciaes que estimava valiosos, com as limitações impostas por seu caracter official e com os meios de que se podiam dispor.

A 21 de Maio de 1898 tive a satisfação de poder informar á Commissão que as medidas economicas adoptadas tinham dado em resultado uma reducção de $5,000 mensaes das despezas que se faziam quando tomei a meu cargo a Secretaria, e assim mesmo lhe manifestei que abrigava a esperança de que os fundos da Secretaria fossem sufficientes para levar adiante os trabalhos até a conclusão do anno economico, o dia 30 de Junho de 1898. Minhas

esperanças se realisaram, e ao fim do citado anno ficava um saldo de $702.78. As recommendações que fiz á Commissão Executiva no relatorio que apresentei na sessão de 21 de Maio foram aceitadas.

No dia 25 de Junho de 1898 se verificou outra sessão da Commissão Executiva e nella manifestei que se acercava o dia 30 de Junho, data fixada para a expiração de meu periodo como Director provisorio. Creêndo a Commissão que não era opportuna, sob as condições então existentes, a nomeação de um Director permanente, prorogou meu periodo como Director provisorio até o dia 1° de Outubro e de novo me conferiu os poderes especiaes que me tinha dado no dia 28 de Fevereiro. Nas sessões da Commissão Executiva de 27 de Setembro e de 26 de Outubro de 1898 foi prorogado novamente o citado periodo. Nesta ultima sessão se resolveu que a administração provisoria da Secretaria continuará com caracter indefinido afim de que a Commissão não se viesse obrigado a emittir outra resolução a respeito da administração antes de que houvessem realizados os projectos que estão em via de execução para o desenvolvimento dos trabalhos sobre bases mais economicas.

Os esforços da direcção provisoria têm sido dedicados necessariamente, em grande parte, aos trabalhos de reorganisação, a levar a cabo os planos do anterior Director, ao pagamento de dividas e ao arranjo de um grande numero de questões resultantes da mudança de methodo na administração da Secretaria. Considerou-se conveniente não sómente arranjar os assumptos da Secretaria, mas demonstrar tambem a practicabilidade de augmentar sua esphera de acção obtendo maior renda por méio de annuncios e venda de publicações, evitando desta maneira a necessidade de dirigir-se outra vez ao Congresso dos Estados Unidos para pedir um credito supplementar. Esperava-se que este resultado podesse ser obtido sem invadir indevidamente os direitos das pessoas occupadas na publicação de annuncios das casas editoriaes. O

methodo empregado para a obtenção de annuncios dentro destes limites está ampliamente explicado no aviso que se publica no BOLETIM MENSAL desde o dia 5 de Fevereiro ultimo. Os resultados justificam a esperança de que a Secretaria receberá o apoio pecuniario das casas de commercio de importancia que têm interesse no desenvolvimento das relações commerciaes entre as varias republicas americanas, e justificam assim mesmo a esperança de que em dia não remoto o BOLETIM MENSAL possa manter-se por si mesmo sem necessidade de agencia em commissão e o conseguinte pagamento de dinheiro antes da entrada da renda proveniente de annuncios.

Os contratos de annuncios têm sido renovados em quantia de $4,961 e têm-se feito novos contratos por $1,018. Estes resultados, ainda que pequenos em proporção á importancia bruta obtida sob o systema anterior, são substancialmente animadores por quanto têm sido obtidos sem indevida solicitação e deixarão em beneficio da Secretaria uma utilidade igual a sua importancia. Não duvido que a continuação da conducta actual a respeito dos annuncios dará em resultado, dentro de um periodo relativamente curto, um augmento na circulação do BOLETIM, um grande adiantamento no caracter das materias contidas no mesmo, e a manutenção desta publicação independentemente da quantia votada pelo Governo. A distribuição gratuita do BOLETIM nos Estados Unidos tem occasionado gastos que, a meu juizo, não estavam justificados pelos recursos da Secretaria, e a circulação livre está limitada agora aos periodicos, camaras de commercio, bibliothecas, funccionarios do Governo e pessoas que solicitam informações especificas. Nas actuaes condições tenho encontrado justificavel pedir ao Congresso dos Estados Unidos que disponha a publicação de 5,000 numeros mensaes para o proximo anno fiscal findo em 30 de Junho de 1900, com o objecto de distribuil-os neste paiz como meio de propagar um conhecimento melhor das fontes de riqueza e possibilidades commerciaes das Republicas latino-americanas. Uma edição

de 8,000 numeros é distribuida no Mexico, America Central e do Sul e as Antilhas, e o custo desta edição assim como o dos numeros que agora se estão distribuindo nos Estados Unidos pode ser pago a meu juizo com a renda provavel proveniente de annuncios.

Além da publicação do BOLETIM, os trabalhos da Secretaria comprehendem a compilação e impressão, de quando em quando, de manuaes sobre os diversos paizes latino-americanos. Quatro destes manuaes têm sido concluidos, e só espero contar com os meios de custear suas despezas de impressão e distribuição para dar-lhes publicidade. O anterior Director chamou a attenção em seu relatorio ao facto de que as verbas votadas para a manutenção da Secretaria não têm sido nunca sufficientes para occorrer ás despezas de impressão de varios documentos que exigiam os planos traçados pela Conferencia Internacional, especialmente em vista do facto que todos esses documentos devem ser impressos no idioma do paiz a que se referem, de igual sorte que em inglez. Sobre este ponto o anterior Director se exprimiu nos seguintes termos:

Investigações mostrarão que os Directores anteriores da Secretaria foram obrigados a recorrerem a varios expedientes afim de poderem imprimir as publicações que sahiram á luz de tempos a tempos. Não teria sido possivel imprimir estas publicações com os fundos á disposição da Secretaria. Obteve-se autorisação do Congresso dos Estados Unidos para publicar os differentes manuaes e outras publicações como documentos do Congresso, que deviam ser pagos do fundo geral de impressão.

Como meio de vencer esta difficuldade, em parte ao menos, o anterior Director propoz aos representantes dos paizes que compõem a União Internacional, que deem passos com o objecto de obter para a Secretaria o uso das quotas contribuidas pelas outras republicas, as quaes são actualmente entregues ao Thesouro dos Estados Unidos, para reembolsar este da quantia das quotas dos varios paizes. Calculou-se que esta medida daria uma renda de uns

$45,000 ou $50,000. Tenho dado passos para levar á pratica esta suggestão, e tem-se pedido ao Congresso dos Estados Unidos a autorisação deste projecto. Têm-se dirigido communicações aos governos dos outros paizes da União Internacional perguntando-lhes si se lhes offerece objecção alguma a respeito da mudança proposta, e quatro delles têm contestado já manifestando seu consentimento. As quantias que se têm recebido dos outros paizes têm variado de anno a anno, mas tenho o prazer de consignar que ha fundamentos substanciaes para esperar que as quotas deste anno excedem com muito a média annual. A Secretaria tem sido informada do prompto pagamento das quotas correspondentes a cinco daquelles paizes, cujo total ascende a $5,027.78; um delles, Venezuela, tem pago a quantia de $540.41 em excesso durante o exercicio findo em 30 de Junho de 1898. Esta quantia excede ao total de quotas recebidas dos outros paizes da União no exercicio anterior, que foi de $4,216.02.

Além de suas varias publicações, a Secretaria se occupa activamente em subministrar informações, já verbalmente, já por escripto, aos que as pedem, não sómente dos Estados Unidos, mas tambem de muitas outras partes do mundo, especialmente nos paizes da União Internacional Americana. Este ramo dos trabalhos da Secretaria tem alcançado taes proporções que o anterior Director houve de estabelecer uma secção de informação com o objecto especial de responder aos pedidos de informações. Estes pedidos de informações têm continuado augmentando em numero, e a Secretaria recebe com frequencia cartas dos outros paizes da União, nas quaes se solicita o auxilio da Secretaria com o objecto de obter informações em assumptos commerciaes, ou de interessar o capital americano em emprezas mineiras, industriaes ou commerciaes nos diversos paizes. Muitas das cartas referem-se em termos laudatorios ao Boletim Mensal da Secretaria, facto que indica que essa publicação se está distribuindo com resultados satisfactorios nos paizes latino-americanos e que se está dando a

conhecer como meio pratico de fomentar o commercio. A Secretaria responde aos pedidos dos iniciadores de emprezas especiaes em busca de capital americano, chamando sómente a attenção a taes emprezas nas paginas do BOLETIM depois de convencer-se de que propriamente pode dar-se publicidade a taes projectos. Nos casos em que a Secretaria não pode prestar ajuda alguma, se suggere aos solicitantes que recorrem ás corporações commerciaes dos Estados Unidos que estejam comprehendidas nas especificações dentro do campo de acção que interessa ao solicitante.

As perguntas que geralmente se fazem se referem ás fontes especiaes agricolas e mineiras dos varios paizes; á maneira de obter terrenos para o cultivo, para a criação de gado e para a mineração; os methodos empregados para a fabricação da assucar e producção de café, cacáo, borracha, frutas tropicaes, etc., e as medidas que se têm de tomar para adquirir terras, ja seja para a applicação da actividade particular ou para levar a cabo emprezas em uma escala mais comprehensiva. Frequentemente se pedem informações acerca dos direitos impostos nos diversos paizes sobre artigos ou classes especiaes de mercadorias, direitos de entrada e regulamentos de portos, estatisticas de exportação e importação, condições impostas pelas leis de um paiz respeito ás industrias e ao commercio, nomes dos funccionarios do governo a quem ha de dirigir-se em assumptos especiaes, etc. Dos paizes latino-americanos, vêm, em numero crescente, pedidos de informações sobre os mercados dos Estados Unidos com relação a certos productos daquelles paizes e ás classes de artigos que se produzem ou fabricam nos Estados Unidos que podessem ser tomados em permuta, os nomes dos importadores e exportadores interessados no commercio latino-americano, e outros pontos que mostram um grande desejo de cultivar ralações mais estreitas.

Em cumprimento da recommendação feita pelo anterior Director em seu relatorio á Commissão Executiva em Fevereiro ultimo, a Secretaria foi representada exhibindo seus trabalhos

na Exposição Internacional Trans-mississippiana de Omaha, Nebraska, a qual encerrou-se a 31 de Outubro ultimo. No BOLETIM de Novembro de 1898, paginas 777–779, se encontrará um relatorio apresentado pelo agente da Secretaria naquella Exposição. Neste relatorio se indica que a exhibição feita pela Secretaria servio não sómente para fazer conhecer mais extensamente ao povo dos Estados Unidos a utilidade da Secretaria, mas tambem para attrahir a attenção para as possibilidades commerciaes e industriaes do Mexico, America Central e do Sul, e as Antilhas. O anterior Director suggerio tambem a idea de que a Secretaria fosse representada na Exposição de Paris de 1900, assim como nas exposições que tenham de celebrar-se nos differentes paizes da União Internacional. Como meu cargo de director é meramente provisorio, não senti-me justificado em tomar medidas para levar a cabo estas recommendações, mas as submetto respectivamente á consideração da Commissão Executiva.

Remetto juntamente com este um relatorio sobre a situação economica da Secretaria durante o exercicio findo em 30 de Junho de 1898, e que comprehende tambem o periodo transcorrido desde a data em que assumi o encargo de Director da Secretaria, em 5 de Fevereiro ultimo até o 1° do corrente; acompanho tambem os numeros do BOLETIM MENSAL publicados durante o anno passado, nos quaes se dá conta successivamente dos trabalhos realizados pela Secretaria. É objecto de grande prazer para mim reiterar em meu proprio nome as expressões de reconhecimento que o anterior Director fez presente á Commissão Executiva, e que eu extendo aos representantes de todos os paizes da União Internacional pela sua valiosa cooperação no exito dos trabalhos da Secretaria e seu cordial apoio dos esforços feitos para augmentar sua utilidade.

Tenho a honra de ser vosso obediente servidor,

FREDERIC EMORY,

Director.

RECEITA.

1º de Julho de 1897 até 30 de Junho de 1898.

Verba votada:		
Verba annual, 1898	$28, 000. 00	
Verba supplementar, 1898	41, 972. 00	
		$69, 972. 00
Annuncios		32, 051. 41
Vendas:		
Do Directorio Commercial	16, 681. 50	
De outras publicações	5, 904. 14	
		22, 585. 64
Total		124, 609. 05
Gastos		123, 906. 27
Balanço, 1º de Julho de 1898		702. 78

DESPEZA.

De 1º de Julho de 1897 até 30 de Junho de 1898.

	Pago pelo pagador da Secretaria de Estado.		Pago pelo Director da Secretaria* do fundo de receita recebida de aluguel, vendas, etc.	Total.
	Pela verba para o exercicio de 1898.	Do fundo de receita recebida de aluguel, vendas, etc.		
Ordenados dos empregados	$37, 999. 69	$8, 184. 58	$3, 908. 16	$50, 092. 43
Papel de escriptorio	6, 968. 95	964. 69	781. 00	8, 714. 64
Aluguel de casa para a Secretaria	1, 666. 66	833. 35	.....	2, 500. 01
Commissões	5, 884. 70	5, 200. 00	13, 105. 80	24, 190. 50
Gastos da repartição de New York	360. 83	553. 43	2, 065. 63	2, 979. 89
Machinas de escrever	1, 086. 07	.....	.....	1, 086. 07
Mobilia, concertos, etc	1, 191. 65	165. 79	.....	1, 357. 44
Sellos de correio	778. 00	.....	450. 00	1, 228. 00
Bibliotheca	89. 12	241. 61	100. 60	431. 33
Cabo e telegrapho	731. 62	127. 91	96. 46	955. 99
Impressão do Boletim	7, 636. 01	11, 773. 94	1, 000. 00	20, 409. 95
Mappas	2, 714. 34	.....	206. 25	2, 920. 59
Telephono	263. 96	62. 50	.....	326. 46
Gastos varios	2, 547. 44	2, 314. 45	1, 851. 08	6, 712. 97
Total	69, 919. 04	30, 422. 25	23, 564. 98	123, 906. 27

*Não se tem feito pagamento algum pelo Director desde 5 de Fevereiro de 1898, com excepção dos recibos expedidos contra o pagador da Secretaria de Estado para seu pagamento dos fundos da verba ou da receita proveniente de vendas, rendas, etc. que se depositam immediatamente no Thesouro dos Estados Unidos.

De 5 de Fevereiro de 1898 até 30 de Junho de 1898.

	Pago pelo pagador da Secretaria de Estado pela verba para o exercicio de 1898.	Pago pelo pagador da Secretaria de Estado do fundo de receita, etc.	Total.
Ordenados dos empregados	$19, 476. 57	$514. 61	$19, 991. 18
Papel de escriptorio	3, 666. 10	13. 69	3, 679. 79
Aluguel de casa para a Secretaria	666. 66	333. 34	1, 000. 00
Commissões por contratos feitos antes do 1 de Março de 1898	.....	5, 200. 00	5, 200. 00
Gastos da repartição de New York	335. 83	553. 45	889. 28
Mobilia	555. 61	.....	555. 61
Bibliotheca	32. 12	145. 69	177. 81
Cabo e telegrapho	602. 80	.....	602. 80
Impressão do Boletim	6, 142. 38	10, 750. 26	16, 892. 64
Mappas	2, 347. 50	.....	2, 347. 50
Telephono	97. 02	.....	97. 02
Gastos varios	1, 522. 28	1, 684. 97	3, 207. 25
Total	35, 444. 87	19, 196. 01	54, 640. 88

Total da receita e despeza de 1º de Julho de 1898 até 30 de Novembro de 1898.

Verba votada, 1899				$36, 000. 00	
Gastos				19, 430. 79	
Balanço, 1º de Dezembro de 1898					$16, 569. 21
Receita proveniente de vendas, aluguel, etc.:					
Balanço, 1º de Julho de 1898				649. 82	
De annuncios		$16, 444. 70			
De vendas:					
Do Directorio Commercial	$260. 00				
De outras publicações	457. 83				
		717. 83			
				17, 162. 53	
				17, 812. 35	
Gastos				16, 078. 85	
Balanço, 1º de Dezembro de 1898					1, 733. 50
Valor dos annuncios, 1º de Dezembro de 1898					16, 500. 00
Contas não cobradas					8, 000. 00
Total dos recursos da Secretaria 1º de Dezembro de 1898					42, 802. 71

DESPEZA.

De 1º de Julho até 30 de Novembro de 1898.

	Da verba para o exercicio de 1899.	Da receita proveniente de vendas, aluguel, etc.	Total.
Ordenados dos empregados	$14, 830. 44	$2, 743. 54	$17, 573. 98
Papel de escriptorio	85. 80	52. 41	138. 21
Aluguel da casa da Secretaria	833. 33	.....	833. 33
Impressão do Boletim	3, 279. 25	9, 456. 36	12, 735. 61
Sellos de correio	153. 17	266. 00	419. 17
Bibliotheca	36. 50	11. 25	47. 75
Commissões por contratos feitos antes do 1º de Maiço de 1898	.....	2, 375. 18	2, 375. 18
Telephono	33. 75	33. 75	67. 50
Gastos varios	178. 55	1, 140. 36	1, 318. 91
Total	19, 430. 79	16, 078. 85	35, 509. 64

RAPPORT ANNUEL

DU

BUREAU DES RÉPUBLIQUES AMÉRICAINES.

MESSAGE DU PRÉSIDENT DES ETATS-UNIS, LE TRANSMETTANT AU CONGRÈS.—LETTRE DU MINISTRE DES AFFAIRES ÉTRANGÈRES COMMENTANT LES RÉSULTATS.

REPRISE DES RELATIONS PAR LA RÉPUBLIQUE ARGENTINE.—ENTRÉE PROBABLE DU CHILI DANS L'UNION.—PROGRÈS RÉCENT DANS LE TRAVAIL DU BUREAU.

Le rapport annuel du Directeur du Bureau des Républiques Américaines pour l'année 1898 a été transmis, avec les documents qui l'accompagnent, au Congrès des Etats-Unis, le 6 janvier, avec le message suivant du Président:

Au Sénat et à la Chambre des Députés:

Je remets ci-joint une communication reçue du Ministre des Affaires Etrangères renfermant le rapport annuel du Directeur du Bureau des Républiques Américaines, accompagné des documents.

En vue de la condition améliorée et de l'utilité croissante du Bureau, sur laquelle j'ai déjà attiré l'attention dans mon message annuel, et l'assurance agréable d'une plus grande activité de la part des autres Républiques Américaines au maintien de ses projets, j'approuve fortement les recommandations du Ministre des Affaires Etrangères. Il sera sans doute aussi agréable pour le Congrès que pour moi, de savoir que la République Argentine

s'est décidée à reprendre ses relations avec le Bureau, et qu'il y a lieu d'espérer que l'Union Internationale Américaine, créée par la conférence solennelle des représentants de nos Républiques Sœurs, et de ceux des Etats-Unis à Washington en 1889–90, sera bientôt augmentée par l'adhésion de la République du Chili qui se joindra aux autres pour le maintien du Bureau en qualité d'organe de l'Union. L'intérêt que montrent les Etats-Unis en donnant le plus d'aide possible à la Conférence Internationale pour l'encouragement, non seulement des relations commerciales, mais pour le rapprochement de l'intimité parmi les différentes Républiques de cet hémisphère, est si évident que je suis sûr que le progrès fait par le Bureau recevra l'approbation et le soutien du Congrès.

WILLIAM MCKINLEY.

MAISON EXÉCUTIVE.
Washington, le 6 janvier 1899.

LETTRE DU MINISTRE DES AFFAIRES ÉTRANGÈRES.

Monsieur le PRÉSIDENT:

J'ai l'honneur de vous transmettre le rapport annuel du Directeur du Bureau des Républiques Américaines parlant plus spécialement de la direction provisoire du Bureau, depuis la mort de l'ancien Directeur, M. JOSEPH P. SMITH, le 5 février 1898. A une réunion du Comité Exécutif de l'Union Internationale des Républiques Américaines, tenue le 17 de ce mois, on a lu et approuvé le rapport. On remarquera que le Directeur Provisoire, un fonctionnaire du Ministère des Affaires Etrangères, choisi, avec le consentement entier du Comité Exécutif pour prendre la direction du Bureau au mois de février dernier, s'est occupé principalement d'exécuter les plus importants projets de l'ancien Directeur; de faire face aux difficultés financières qui sont survenues principalement des opérations commerciales résultant d'un contrat passé par le Comité Exécutif en novembre 1896, afin d' obtenir des

annonces pour le BULLETIN MENSUEL, et de concilier les réclamations des maisons de publicité et des autres intérêts, au sujet de la concurrence d'un bureau maintenu en partie par les allocations du Congrès des Etats-Unis, avec le désir du Comité Exécutif d'obtenir les revenus nécessaires au maintien du Bureau et à l'extension de son travail.

Il m'est agréable de pouvoir dire que la direction provisoire a, en somme, atteint ces résultats, et que le Bureau paraît être entré dans une voie de développement qui promet le progrès constant des projets de la Conférence Internationale Américaine de 1889–1890, en le créant comme agence pour l'encouragement de relations fraternelles et commerciales entre les différentes Républiques de l'Hémisphère Occidental. Les efforts du Bureau dans le passé, ainsi que le rapport du Directeur en 1897 les a fait voir, ont été nécessairement d'un caractère plus ou moins expérimental, vu que le plan tracé par la Conférence Internationale était nouveau dans la conception, ainsi que dans le but à atteindre, et son exécution entraînait la solution de beaucoup de problèmes embarrassants. On espère qu'on est enfin arrivé à une solution sûre, et on trouve lieu de se fier à cet espoir, non seulement à cause de la condition actuelle du Bureau, mais parce que les autres membres de l'Union lui accordent leur protection active et cordiale.

Selon le rapport du Directeur, il paraît que les réponses aux récentes demandes pour le versement des contributions annuelles des pays de l'Amérique Latine ont déjà eu pour résultat le paiement par cinq de ces pays, d'une somme qui dépasse considérablement le total de l'argent reçu pendant l'année fiscale antérieure. On remarquera aussi que quelques membres de l'Union Internationale qui, pendant plusieurs années, ont cessé de prendre une part active, font preuve d'un désir de renouer leurs relations d'autrefois et de renouveler leurs souscriptions pour le maintien du Bureau. Parmi ceux-ci, on peut citer la République Argentine qui vient de notifier officiellement son intention. Le Directeur attire l'attention sur les expressions d'intérêt de la part du Ministre du Chili aux

Etats-Unis, qui justifient l'espoir que le Chili, le seul pays participant à la Conférence Internationale Américaine qui n'est pas devenu dans la suite membre de l'Union, profitera de ce privilège, affermissant ainsi la solidarité des Républiques Américaines dans l'effet d'unir et d'encourager les intérêts communs de tous.

Au moment où les pensées de l'homme se portent plus que jamais vers les bénéfices qui attendent les industries et le commerce des Etats-Unis dans d'autres pays, l'importance de profiter des nombreuses preuves d'amitié de nos voisins du sud, offertes dans l'esprit d'un libre échange et d'un secours mutuel, devient manifeste; et quand nous considérons les nombreux points de rencontre des intérêts et des aspirations des Républiques de l'Amérique Latine, avec ceux qui sont gravés le plus profondément dans notre vie nationale, il semble non moins évident que chaque pas fait vers une identification plus intime de sympathies et de projets doit contribuer sensiblement au développement économique et social de nos Républiques Sœurs, aussi bien qu'au nôtre.

Au point de vue de son utilité probable dans ces directions, l'activité croissante du Bureau des Républiques Américaines sur des lignes qui se recommandent surtout aux représentants des autres pays de l'Union Internationale, me semble un sujet de félicitations spéciales, et je demande respectueusement que l'attention du Congrès soit attirée sur le fait qu'on s'efforce d'économiser les ressources du Bureau, aussi bien que de les développer, afin d'augmenter son utilité pratique sans frais pour le trésor public.

Le Ministre des Finances, sur ma demande, a transmis au Congrès les prévisions du Bureau pour la prochaine année fiscale, ainsi que l'extrait d'un acte permettant l'emploi par le Bureau des sommes reçues des autres pays pendant l'année fiscale courante Les raisons pour la législation proposée sont données en détail dans les communications du Directeur du Bureau qui accompagnent les lettres du Ministre des Finances à la Chambre des Députés, et qui, j'espère, se recommanderont au Congrès comme étant entièrement justifiées par les exigences actuelles.

J'ai l'honneur d'appuyer les recommandations du Directeur qui demande que le Congrès autorise la publication de 2,500 exemplaires du rapport annuel pour être distribués par le Bureau afin de satisfaire aux demandes d'information relativement à sa condition actuelle et à ses projets pour l'avenir.

Je suis, avec respect,

JOHN HAY.

MINISTÈRE DES AFFAIRES ETRANGÈRES,
Washington, le 30 décembre 1898.

LETTRE DU DIRECTEUR.

BUREAU DES RÉPUBLIQUES AMÉRICAINES,
Washington, D. C., le 21 décembre 1898.

MONSIEUR: Conformément aux instructions du Comité Exécutif de l'Union Internationale des Républiques Américaines, dans sa réunion du 17 courant, j'ai l'honneur de demander que le rapport ci-joint des opérations du Bureau des Républiques Américaines, pendant l'année écoulée, ainsi que le résumé succinct des actes du Comité Exécutif à la dernière séance, soient soumis au Président en vue de sa transmission au Congrès des Etats-Unis.

Outre l'information donnée dans le rapport que la République du Chili accordera peut-être pour la première fois son soutien actif au Bureau, je suis heureux de pouvoir dire que je viens de recevoir des informations officielles que la République Argentine, qui depuis 1891 n'a pas contribué au maintien du Bureau, s'est décidée à prendre les mesures nécessaires pour le renouvellement de ses relations antérieures. Pour ce résultat heureux, on doit une reconnaissance toute spéciale à M. le Dr. GARCIA MÉROU, Ministre de la République Argentine à Washington, qui s'est occupé spécialement de faire comprendre à son Gouvernement l'utilité [illegible]ante du Bureau.

Afin que le Bureau soit à même de répondre aux demandes reçues de divers endroits relativement à sa condition et ses projets,

je demanderai respectueusement que le Congrès autorise la publication d'une édition de 2,500 exemplaires du rapport annuel pour être distribués par le Bureau.

J'ai l'honneur d'être, Monsieur, avec le plus profond respect, votre très humble serviteur,

FRÉDÉRIC EMORY,
Directeur.

LE MINISTRE DES AFFAIRES ETRANGÈRES.

DÉCISIONS DU COMITÉ EXÉCUTIF, UNION INTERNATIONALE DES RÉPUBLIQUES AMÉRICAINES, LE SAMEDI, 17 DÉCEMBRE 1898.

WASHINGTON, D. C., *le 17 décembre 1898.*

Le Comité Exécutif de l'Union Internationale des Républiques Américaines s'est réuni le samedi, 17 décembre, à 11 heures du matin, dans la salle diplomatique au Ministère des Affaires Etrangères.

La réunion a eu lieu sur la demande de l'Honorable JOHN HAY, Ministre des Affaires Etrangères, Président du Comité.

Voici les noms des membres qui assistaient à cette réunion:

Le Señor Dr. Don MARTIN GARCIA MÉROU, Ministre de la République Argentine;

Le Señor Don JOAQUIN BERNARDO CALVO, Ministre de Costa Rica;

Le Señor Don MANUEL M. PONTÉ, Chargé d'Affaires du Venezuela;

M. FREDERIC EMORY, Directeur du Bureau.

Sur la demande du Comité Exécutif, le Directeur a lu le rapport annuel du Bureau et a expliqué ensuite les principaux points de la situation financière.

La première page donne les recettes et dépenses effectuées pendant l'année fiscale finissant le 30 juin 1898. Je suis entré en fonctions le 5 février 1898, et le rapport détaillé sur la page suivante montrera de quelle manière j'ai effectué les dépenses

pendant le reste de l'année fiscale. Sur la troisième page se trouve l'état des recettes et des dépenses depuis le 1er juillet au 30 novembre 1898, montrant la situation actuelle du Bureau et de ses ressources. L'allocation annuelle était de $36,000 et les dépenses s'élevaient à $19,430.79, faisant ressortir le 1er décembre 1898 un excédent de $16,569.21. Les recettes provenant des annonces et de la vente de l'Annuaire de Commerce et d'autres publications s'élèvent en tout, pendant cette période, du 1er juillet au 30 novembre, à $17,812.35, et les dépenses à $16,078.85, faisant ressortir un excédent de $1,733.50. A cette somme, j'ai ajouté la valeur actuelle des annonces le 1er décembre 1898, soit $16,500, et des comptes non acquittés qui s'élèvent à $8,000, donnant ainsi le 1er décembre 1898, un chiffre de $42,802.71 comme ressources totales du Bureau. Le quatrième tableau expose en détail les sommes que j'ai dépensées depuis le 1er juillet au 1er décembre. Dans cet exposé se trouve un article—commissions sous contrat antérieurement au 1er mars 1898—qui veut dire qu'on les avait décidées avant mon entrée en fonctions. On verra que je les ai acquittées de mon mieux.

Le Ministre de la République Argentine, M. Mérou, a pris ensuite la parole: "Nous trouvons que le rapport de M. Emory est très satisfaisant et nous pouvons lui accorder notre pleine approbation. Je suis très heureux d'apprendre que le Gouvernement du Chili a manifesté son intention d'entrer dans l'Union, ce qui réunira ainsi tous les intérêts de l'Amérique Latine. Je pense qu'il serait peut-être bon de manifester la satisfaction du Comité à cet égard."

Le Ministre de Costa Rica, M. Calvo, a dit ensuite: "Je partage les sentiments du Ministre de la République Argentine, et j'espère que le Directeur du Bureau sera autorisé à faire connaître au Ministre du Chili combien le Comité est désireux de voir cette République entrer dans l'Union."

Le Président s'est exprimé en ces termes: "Pour se conformer

aux désirs du Comité, le Directeur fera part au Ministre du Chili de la satisfaction ressentie par le Comité en apprenant les bonnes intentions de cette contrée qui désire devenir membre de l'Union."

On a donc approuvé le rapport, et on a donné les instructions nécessaires au Directeur, afin qu'il puisse le transmettre au Congrès des Etats-Unis.

Le Comité a ensuite levé la séance.

RAPPORT ANNUEL.

BUREAU DES RÉPUBLIQUES AMÉRICAINES,
Washington, le 17 décembre 1898.

Au Ministre des Affaires Etrangères, Président, et aux Membres du Comité Exécutif de l'Union Internationale des Républiques Américaines:

MESSIEURS: J'ai l'honneur de transmettre le rapport des opérations du Bureau des Républiques Américaines depuis que j'en ai pris la direction au moment de la mort de l'ancien Directeur, M. JOSEPH P. SMITH, le 5 février 1898. M. SMITH n'a été que quelques mois Directeur du Bureau. Sa mort prématurée, en privant cette administration de ses services, a coupé court à l'exécution des plans qu'il avait conçus et en partie exécutés, dans le but d'étendre le plan et l'utilité pratique du travail que la Conférence Internationale Américaine avait en vue en établissant le Bureau en 1890. Les détails des projets de M. SMITH sont clairement exposés dans le rapport annuel préparé sous sa direction, mais qui n'a jamais reçu son approbation formelle—je l'ai présenté au comité le 28 février dernier, parce qu'il renfermait en substance ses vues, comme je l'ai dit dans ma communication de cette date. Ce rapport donne un résumé soigneux du travail du Bureau jusqu'à la date de ma nomination comme Directeur Provisoire par le Ministre des Affaires Etrangères avec l'approbation du Comité Exécutif.

Le rapport a été publié avec l'autorisation du Congrès des Etats-Unis, et par consequent il m'est inutile de revenir sur ses conclusions. Toutefois je suis très heureux de pouvoir dire que j'ai pu faire avancer, autant que possible dans les conditions existantes, les projets auxquels l'ancien Directeur attachait le plus d'importance. Parmi ceux-là figurait l'achèvement d'un Annuaire de Commerce des Républiques Américaines, en deux volumes, comprenant en tout 2,643 pages de matière descriptive et statistique, soigneusement préparée, exposant les ressources naturelles, les industries, le commerce et les lois existantes au point de vue de l'agriculture, et des entreprises commerciales dans tous les pays de l'Hémisphère Occidental, avec des listes de noms de commerçants et de fabricants dans chaque pays, que l'on croyait spécialement intéressés dans le développement des relations commerciales parmi les différentes contrées. On a achevé le second volume (1,589 pages) en novembre dernier, et l'on a commencé la distribution des exemplaires du deuxième volume le 24 novembre 1898, un an environ après la publication du premier volume. On croit que ce travail, conçu entièrement par l'ancien Directeur, est unique dans son plan et son exactitude générale, et qu'on le trouvera d'une grande valeur pratique, non seulement dans les maisons de commerce faisant des affaires avec l'Amérique Latine ou qui désirent en faire, mais aussi comme livre de références pour tous ceux qui cherchent des informations relatives au développement commercial et industriel des Républiques Américaines et des possessions coloniales des Indes Occidentales et autres de cet hémisphère. Le Bureau doit surtout des remerciements à l'Association Nationale des Fabricants et au Musée Commercial de Philadelphie pour les conseils et l'aide qui lui ont été donnés en compilant les listes de commerçants du second volume de l'Annuaire de Commerce qui traite des Etats-Unis.

Un autre projet auquel l'ancien Directeur tenait beaucoup, ainsi que son rapport le fait voir, était le développement de l'utilité du Bureau selon les lignes qui le recommanderaient aux

maisons commerciales des Républiques de l'Amérique Latine comme une agence pratique pour vaincre les obstacles en vue de resserrer les relations commerciales avec les Etats-Unis et la création de nouveaux débouchés de commerce. Je suis heureux de pouvoir dire qu'on a fait un progrès sensible dans cette voie et je puis répéter hautement ce que disait l'ancien Directeur dans son rapport annuel pour 1897: "Le Bureau doit une grande partie de sa croissance récente à la participation plus vigilante et plus active de ceux qui représentent à Washington les différentes Républiques intéressées." A la fin de l'année 1898 le Bureau se trouve dans la position encourageante d'avoir le soutien unanime et cordial des représentants diplomatiques de tous les membres de l'Union Internationale, et il est à espérer que les Républiques montreront, pour son travail, un intérêt toujours croissant. Les nombreuses expressions d'appui et d'approbation qu'on peut trouver dans les archives du Bureau justifient pleinement cette attente. Un incident agréable qui confirme ces vues a eu lieu pendant la visite récente du Président de Costa Rica qui, après avoir examiné ses travaux, exprima son approbation et son intention de contribuer par tous les moyens possibles à son développement.

Le Bureau doit une reconnaissance toute spéciale à l'ancien membre du Comité Exécutif, M. Romero, Ministre du Mexique, qui, conformément à la règle établie pour le changement des membres qui a lieu chaque année, s'est retiré du Comité en juin dernier, mais qui a encore continué à montrer beaucoup d'intérêt dans ses affaires; et à l'ancien ministre du Brésil aux Etats-Unis, M. Mendonça, qui, dès le commencement du Bureau, lui a donné ses conseils et son soutien zélé. Le Bureau vient d'être honoré par les marques d'intérêt pour son travail de la part du Ministre du Chili, Señor Don Carlos Morla Vicúna, récemment accrédité aux Etats-Unis. Ces marques d'intérêt donnent lieu d'espérer que le Gouvernement du Chili, quoique représenté dans la Conférence Internationale Américaine qui créa le Bureau, n'a jamais

profité du droit qui lui était octroyé d'entrer dans l'Union, se décidera dans un avenir prochain à donner au Bureau son soutien actif.

J'ai eu l'honneur de dire au Comité, à l'occasion de sa réunion le 28 février dernier, que j'avais trouvé les affaires du Bureau dans une condition plus ou moins embarassante, due à la longue maladie du Directeur, lorsque je me suis chargé de la direction. Les finances étaient aussi dans une condition peu satisfaisante, par suite d'un contrat conclu en novembre 1896, par l'autorité du Comité Exécutif, sous l'administration du prédécesseur de l'ancien Directeur. En approuvant ce contrat, le Comité comptait recevoir au moyen des annonces insérées dans le BULLETIN MENSUEL du Bureau, des revenus suffisants pour couvrir les dépenses de cette publication afin d'améliorer le contenu, et d'en augmenter peu à peu la circulation en vue de faire circuler dans les différents pays des informations relatives aux ressources, aux industries et au commerce de chacun. Le contrat stipulait que l'agent de publicité devait recevoir une commission de 40 pour cent sur la valeur totale provenant des annonces. Comme base de l'exécution heureuse de ces efforts, on avait publié pendant plusieurs mois une édition du BULLETIN, coûtant plus de $9,000 par mois, soit $108,000 par an. Le revenu annuel en gros provenant de la publicité s'estimait à $60,000, mais de cette somme il fallait déduire la commission de 40 pour cent, laissant un solde net de $36,000.

Attendu que c'était l'habitude de payer les commissions immédiatement, et qu'il fallait attendre pour le remboursement de cette somme que tous les comptes soient acquittés, il était évident, que même si le revenu en perspective était suffisant, un capital considérable serait nécessaire pour faire face aux dépenses immédiates. Le budget annuel du Bureau n'était que de $28,000 et l'agrandissement de son travail avait nécessité l'emploi d'un plus grand nombre de personnes. En janvier 1898, le Congrès des Etats-Unis a

voté un budget de déficit de $41,972. A cette époque le Bureau avait encore beaucoup à payer pour des salaires et un nombre de réclamations provenant de ses opérations commerciales, ainsi que du travail augmenté de compilation, de traduction, d'écritures à la machine, etc., de nombreuses publications. Il était évident que le solde restant du budget de déficit suffirait à peine au paiement de ces dépenses et à l'exécution efficace du travail en progrès.

En vue de ces circonstances, j'ai fait entrevoir au Comité Exécutif qu'il serait avantageux de mettre fin au contrat pour la sollicitation d'annonces, moyennant commission, d'autant plus qu'on avait reçu de nombreuses marques de mécontentement de différents endroits à propos de l'entrée en concurrence d'agents d'un bureau, maintenu en partie par le Gouvernement des Etats-Unis, avec les intérêts particuliers s'occupant de la publicité. D'un autre côté, il paraissait possible d'accomplir l'intention originelle du Comité Exécutif afin d'assurer des revenus pour le maintien du BULLETIN MENSUEL sans la sollicitation par des personnes ayant de l'intérêt plus ou moins spéculatif, et sans la concurrence excessive avec les intérêts particuliers, en continuant à offrir aux commerçants et aux fabricants l'emploi des pages du BULLETIN comme moyen de faire connaître les mérites de leurs marchandises dans les marchés qu'ils désiraient atteindre. Le Comité Exécutif a accepté ces conclusions, et m'a nommé Directeur du Bureau pour une période ne dépassant pas l'année fiscale courante, finissant le 30 juin 1898, avec pleins pouvoirs de réorganiser les affaires du Bureau, de résilier les contrats conclus pour la publicité, pour la sollicitation d'abonnements ou autres objets commerciaux qui pourraient me sembler porter préjudice aux intérêts du Bureau, etc., ayant toujours en vue les intérêts généraux de l'Union Internationale et les désirs du Comité.

Avec l'autorité qui m'a été ainsi conférée j'ai notifié immédiatement la résiliation du contrat pour les annonces, et je me suis occupé de la réorganisation du Bureau, ayant en vue de développer

les affaires et de concilier les moyens de commerce qui me sembleraient avantageux dans les limites officielles et les moyens qui étaient à ma disposition.

Le 21 mai 1898, j'ai eu la satisfaction de pouvoir informer le Comité que le résultat des économies faites ainsi avait permis de faire face aux obligations que j'ai trouvées lors de mon entrée au Bureau, obligations se montant à la somme de $5,000 environ par mois; et voyant cela, j'ai pensé que les ressources du Bureau suffiraient aux exigences pour le reste de l'année fiscale se terminant le 30 juin 1898. Cet espoir s'est réalisé, et à la fin de ladite année fiscale, il restait un excédant de $702.78. Les conclusions et les recommandations que j'ai faites dans le rapport à la réunion du 21 mai ont reçu l'approbation du Comité exécutif.

Une autre réunion du Comité Exécutif a eu lieu le 25 juin 1898, à laquelle j'ai annoncé l'expiration prochaine, 30 juin, du terme de ma nomination comme Directeur Provisoire. Le comité, s'étant assuré que les conditions n'exigeaient pas alors la nomination d'un Directeur Permanent, a prolongé mon terme comme Directeur Provisoire jusqu'au 1er octobre, et a affermi de nouveau les pouvoirs spéciaux qu'il m'avait conférés le 28 février. On a encore prolongé le terme aux réunions du 27 septembre et du 26 octobre 1898.

A cette dernière réunion, on a renouvelé indéfiniment la direction provisoire, afin que le Comité ne soit plus obligé de prendre une nouvelle décision jusqu'à ce que les plans en voie d'exécution pour le développement du travail sur une base plus économique soient exécutés.

Les efforts de la direction provisoire ont été nécessairement, en grande partie, consacrés au travail de réorganisation, à l'exécution des projets de l'ancien Directeur, à l'arrangement des demandes et au règlement de plusieurs questions provenant des changements dans les méthodes d'affaires. On a pensé qu'il était bon de ne pas seulement réorganiser les affaires du Bureau, mais aussi de démon-

trer aussi, s'il était possible, la praticabilité d'augmenter son utilité en obtenant un plus grand revenu des annonces et de la vente des publications, obviant ainsi à la nécessité de s'adresser de nouveau au Congrès des Etats-Unis pour une allocation de déficit. On a espéré obtenir ce résultat sans trop retrancher sur les droits des particuliers engagés dans la publicité. Les méthodes employées pour obtenir des annonces dans ces conditions sont très bien expliquées dans les annonces commerciales publiées dans le BULLETIN MENSUEL depuis le 5 février dernier. Les résultats justifient l'espoir que le Bureau recevra l'appui pécuniaire des premières maisons de commerce qui ont un intérêt évident dans le développement des relations commerciales des diverses Républiques Américaines, et que dans un avenir prochain le BULLETIN pourra se passer de l'emploi de solliciteurs à la commission, ce qui nécessite des avances de fonds sur les recettes non encore rentrées des annonces.

On a renouvelé des contrats pour les annonces se montant au chiffre de $4,961, et on a reçu de nouveaux contrats pour le montant de $1,018. Ces résultats, quoique petits en proportion avec le total obtenu sous le dernier régime, donnent une base solide d'encouragement, vu que ces contrats ont été obtenus sans trop de sollicitation et qu'ils donneront au Bureau le montant total de leur valeur. Je n'ai aucun doute que la continuation du présent régime, en ce qui concerne les annonces, placera, en peu de temps, le BULLETIN sur une telle base que sa distribution sera augmentée, le caractère du contenu amélioré, et qu'il pourra faire face à ses dépenses, indépendant des contributions du Gouvernement. Par suite de la distribution gratuite du BULLETIN dans les Etats-Unis, le Bureau a encouru des dépenses qu'à mon avis, ses ressources ne lui permettaient pas, et la distribution gratuite est à présent limitée aux journaux, organisations commerciales, bibliothèques, fonctionnaires du Gouvernement ainsi qu'aux personnes demandant des renseignements spéciaux. Dans ces conditions je me suis cru

autorisé de demander que le Congrès des Etats-Unis vote une allocation pour 5,000 exemplaires du BULLETIN par mois pour la prochaine année fiscale, finissant le 30 juin 1900, afin d'être distribués dans ce pays comme moyen d'encourager et de répandre une meilleure connaissance des ressources et des possibilités commerciales des Républiques de l'Amérique Latine. Une édition de 8,000 exemplaires est distribuée au Mexique, dans l'Amérique Centrale dans l'Amérique du Sud et dans les Indes Occidentales. On pourra faire face, à mon avis, aux dépenses de cette édition, aussi bien qu'à celles des exemplaires qui sont distribués maintenant aux Etats-Unis par les recettes probables des annonces.

Outre la publication du BULLETIN, le travail du Bureau comprend de temps en temps la préparation et l'impression de manuels traitant des différents pays de l'Amérique Latine. Quatre de ces livres ont été finis, et je n'attends que les fonds nécessaires pour leur impression et leur distribution. L'ancien Directeur dans son rapport a attiré l'attention sur le fait que les allocations pour le Bureau n'ont jamais été suffisantes pour faire face aux dépenses d'impression des divers documents demandés d'après le plan de ses opérations suivant ce qui avait été établi par la Conférence Internationale, surtout vu le fait que tous ces documents doivent être imprimés dans la langue du pays dont ils traitent aussi bien qu'en anglais. A ce sujet il dit:

> Un examen montrera que les Directeurs précédents du Bureau furent obligés de recourir à divers expédients afin de pouvoir imprimer les publications qui ont paru de temps en temps. Il leur aurait été impossible de le faire avec les ressources dont ils disposaient, et ils ne le firent qu'avec l'autorisation du Congrès des Etats-Unis d'imprimer des manuels divers et autres publications comme documents officiels devant être payés sur les fonds généraux d'imprimerie

Pour faire face à cette difficulté, le dernier Directeur a conseillé à l'Union Internationale de prendre des mesures afin d'assurer au Bureau l'emploi des fonds versés par les autres Républiques, lesquels fonds sont à présent versés à la Trésorerie, et de rembourser cette dernière selon les différentes quotités des pays.

Il a estimé que ceci élèverait cette source de revenu du Bureau à environ $45,000 ou $50,000. J'ai pris des mesures pour que cette proposition donne un résultat pratique, et j'ai demandé au Congrès des Etats-Unis d'autoriser la proposition indiquée. On a prié les autres pays de l'Union Internationale de faire savoir s'ils avaient des observations à présenter au sujet du changement proposé, et quatre parmi eux ont déjà répondu en donuant leur acquiescement. Les sommes qu'on a reçues des autres pays ont varié d'une année à l'autre, mais je suis heureux de dire qu'il y a de bonnes raisons pour espérer que cette année les contributions dépasseront grandement la moyenne annuelle. Le Bureau a reçu avis du prompt paiement par cinq des pays de leurs quotités s'élevant à $5,027.78. Un de ces pays, le Venezuela, a depassé le montant de $540.41 pendant l'année fiscale finissant le 30 juin 1898. Cette somme est une augmentation sur les totaux reçus des autres pays de l'Union pendant l'année fiscale précédente, se montant au chiffre de $4,216.02.

Outre ces diverses publications, le Bureau est activement occupé à donner des renseignements, verbalement ou par correspondance, à ceux qui s'adressent à nous, non seulement des Etats-Unis mais des autres parties du monde, et surtout des pays de l'Union Internationale Américaine. Cette partie du travail a grandi dans de telles proportions que le dernier Directeur a établi un bureau de renseignements dans le but unique de répondre à toutes ces demandes. Ces demandes ont augmenté continuellement, et le Bureau accuse fréquemment réception de lettres d'autres pays de l'Union, demandant le concours du Bureau pour obtenir des renseignements concernant le commerce pratique, ou pour attirer le capital et la coopération des Etats-Unis dans les affaires agricoles, exploitations de mines, industries, et commerce des différents pays. Beaucoup de ces lettres parlent en termes flatteurs du BULLETIN MENSUEL du Bureau, fait, qui indique que cette publication est distribuée et lue partout dans les pays de

l'Amérique Latine, et est reconnue en ce moment comme une des premières publications pour encourager et avancer le commerce. Le Bureau ne répond qu'aux demandes de ceux qui ont une entreprise spéciale, ou qui désirent l'attention des capitalistes des Etats-Unis dans les pages du BULLETIN, et pas avant qu'il soit convaincu par un examen attentif que les projets indiqués sont dignes d'être publiés. Dans le cas où le Bureau ne peut pas prêter son concours, on envoie aux correspondants les adresses des organisations commerciales des Etats-Unis où l'on peut obtenir la coopération ou le capital dans les champs de commerce particulier.

Ces demandes concernent ordinairement les ressources particulières d'agriculture, d'exploitation des mines, des différents pays, la méthode pour obtenir des terrains pour les industries agricoles, pour l'élevage de bétail et pour l'exploitation des mines, les méthodes employées pour la production de sucres, de café, de cacao, de caoutchouc, des fruits des tropiques etc., et les mesures à prendre afin d'acquérir les terrains, soit pour des particuliers, soit pour entreprendre des affaires sur une grande échelle. On fait fréquemment des demandes de renseignements concernant les droits d'entrée imposés par les tarifs des différents pays sur les articles particuliers ou sur les classes de marchandises, les paiements et les règlements de port, les statistiques des exportations et des importations, et les conditions imposées par les lois d'un pays sur les industries et sur le commerce, les noms des fonctionnaires du Gouvernement, à qui on doit s'adresser à propos des sujets particuliers, etc. On reçoit beaucoup de lettres de l'Amérique Latine, et ces lettres augmentent tous les jours, pour demander des renseignements concernant les marchés aux Etats-Unis pour les produits de l'Amérique du Sud et le genre de marchandises produites et fabriquées aux Etats-Unis que l'on pourrait accepter en échange, les noms des importateurs et exportateurs intéressés dans le commerce de l'Amérique Latine et d'autres renseignements qui indiquent un grand désir de cultiver des relations plus intimes.

D'après la recommandation de l'ancien Directeur dans son rapport présenté au Comité Exécutif en février dernier, le Bureau fut représenté à l'Exposition Internationale Trans-Mississipienne à Omaha, Nebraska, fermée le 31 octobre dernier. On trouvera un rapport fait par l'agent du Bureau à l'Exposition dans le BULLETIN MENSUEL aux pages 777–779. Ce rapport indique que les produits exposés ont non seulement démontré la grande utilité du Bureau aux habitants des Etats-Unis, mais aussi a attiré l'attention sur les possibilités industrielles et commerciales du Mexique, des Républiques de l'Amérique Centrale, de l'Amérique du Sud, et des Indes Occidentales. Le dernier Directeur a aussi conseillé que le Bureau soit représenté à l'Exposition de Paris en 1900, aussi bien qu'aux expositions projetées dans les différents pays de l'Union Internationale. Tant que ma direction n'a été que provisoire, je ne me suis pas trouvé autorisé à faire des projets pour l'exécution de ces recommandations, et je les ai soumis respectueusement à la considération du Comité Exécutif.

Ci-joint, je vous envoie un exposé des finances du Bureau pour l'année fiscale finissant le 30 juin 1898; et aussi pour la période comprise entre ma nomination, le 5 février dernier et le premier du mois courant, ainsi que des exemplaires du BULLETIN MENSUEL publiés pendant l'année dernière contenant des annonces du progrès continuel des affaires du Bureau.

Je suis très heureux de renouveler, moi-même, les expressions de reconnaissance de l'ancien Directeur aux membres du Comité Exécutif, et je puis ajouter aussi, aux représentants de tous les pays de l'Union Internationale, pour leur concours dans la direction des affaires du Bureau et leur appui cordial pour augmenter son utilité.

J'ai l'honneur d'être, Messieurs, votre obéissant serviteur.

FRÉDÉRIC EMORY,

Directeur.

RECETTES.

1er juillet 1897 au 30 juin 1898.

Allocations:		
Annuelle, 1898	$28,000.00	
Déficit, 1898	41,972.00	
		$69,972.00
Annonces		32,051.41
Ventes:		
Annuaire de Commerce	16,681.50	
Autres publications	5,904.14	
		22,585.64
Total		124,609.05
Dépenses		123,906.27
Excédent, 1er juillet 1898		702.78

DÉPENSES.

1er juillet 1897 au 30 juin 1898.

	Payées par le caissier du Ministère des Affaires Etrangères.		Payées par le Directeur du Bureau* des recettes provenant de ventes, loyers, etc.	Total.
	De l'allocation 1898.	Des recettes provenant de ventes, loyers, etc.		
Compensation	$37,999.69	$8,184.58	$3,908.16	$50,092.43
Papeterie	6,968.95	964.69	781.00	8,714.64
Loyer du Bureau	1,666.66	833.35	.....	2,500.01
Commissions	5,884.70	5,200.00	13,105.80	24,190.50
Dépenses de la succursale à New York	360.83	553.43	2,065.63	2,979.89
Machines à écrire	1,086.07	.....	.....	1,086.07
Ameublement, réparations, etc.	1,191.65	165.79	.....	1,357.44
Timbres	778.00	.....	450.00	1,228.00
Bibliothèque	89.12	241.61	100.60	431.33
Télégrammes	731.62	127.91	96.46	955.99
Imprimerie	7,636.01	11,773.94	1,000.00	20,409.95
Cartes	2,714.34	.....	206.25	2,920.59
Téléphone	263.96	62.50	.....	326.46
Dépenses diverses	2,547.44	2,314.45	1,851.08	6,712.97
Total	69,919.04	30,422.25	23,564.98	123,906.27

* Le Directeur n'a fait aucun paiement depuis le 5 février 1898, sauf sur la présentation de bons tirés sur le caissier du Ministère des Affaires Etrangères contre l'allocation ou les recettes provenant de ventes, loyers, etc., qu'on dépose promptement au Trésor des Etats-Unis.

5 février 1898 au 30 juin 1898.

	Payées par le caissier au Ministère des Affaires Etrangères de l'allocation 1898.	Payées par le caissier, recettes, etc.	Total.
Compensation	$19, 476. 57	$514. 61	$19, 991. 18
Papeterie	3, 666. 10	13. 69	3, 679. 79
Loyer du Bureau	666. 66	333. 34	1, 000. 00
Commissions sur contrat antérieurement au 1er mars 1898	.....	5, 200. 00	5, 200. 00
Dépenses, succursale à New York	335. 83	553. 45	889. 28
Ameublement	555. 61	.....	555. 61
Bibliothèque	32. 12	145. 69	177. 81
Télégrammes	602. 80	.....	602. 80
Imprimerie	6, 142. 38	10, 750. 26	16, 892. 64
Cartes	2, 347. 50	.....	2, 347. 50
Téléphone	97. 02	.....	97. 02
Dépenses diverses	1, 522. 28	1, 684. 97	3, 207. 25
Total	35, 444. 87	19, 196, 01	54, 640. 88

Recettes et dépenses totales du 1er juillet 1898 au 30 novembre 1898.

Allocation annuelle			$36, 000. 00	
Dépenses			19, 430. 79	
Excédent, 1er décembre 1898				$16, 569. 21
Recettes provenant de ventes, loyer, etc.:				
Excédent, 1er juillet 1898			649. 82	
D'annonces		$16, 444. 70		
De ventes:				
Annuaire de Commerce	$260. 00			
Autres publications	457. 83			
		717. 83		
			17, 162. 53	
			17, 812. 35	
Dépenses			16, 078. 85	
Excédant, 1er decembre 1898				1, 733. 50
Valeur de la publicité, 1er décembre 1898				16, 500. 00
Comptes non acquittés				8, 000. 00
Ressources totales du Bureau, 1er décembre 1898				42, 802. 71

DÉPENSES.

1er juillet 1898 au 30 novembre 1898.

	De l'allocation 1899.	De recettes provenant de ventes, loyers, etc.	Total.
Compensation	$14, 830. 44	$2, 743. 54	$17, 573. 98
Papeterie	85. 80	52. 41	138. 21
Loyer	833. 33	.....	833. 33
Imprimerie	3, 279. 25	9, 456. 36	12, 735. 61
Timbres	153. 17	266. 00	419. 17
Bibliothèque	36. 50	11. 25	47. 75
Commissions sous contrat antérieurement au 1er mars 1898	.....	2, 375. 18	2, 375. 18
Téléphone	33. 75	33. 75	67. 50
Dépenses diverses	178. 55	1, 140. 36	1, 318. 91
Total	19, 430. 79	16, 078. 85	35, 509. 64

55TH CONGRESS, 3d Session. } SENATE. { DOCUMENT No. 52.

NICARAGUA CANAL COMMISSION.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING,

IN RESPONSE TO RESOLUTION OF THE SENATE OF DECEMBER 15, 1898, A COMMUNICATION FROM THE SECRETARY OF STATE COVERING A PRELIMINARY REPORT FROM THE NICARAGUA CANAL COMMISSION.

JANUARY 6, 1899.—Read, laid on the table, and ordered to be printed.

To the Senate of the United States:

I transmit herewith, in answer to the resolution of the Senate of December 15, 1898, a communication from the Secretary of State covering a preliminary report from the Nicaragua Canal Commission, dated December 26, 1898, relative to its progress in investigating the question of the proper route, the feasibility and cost of construction of the Nicaragua Canal.

WILLIAM MCKINLEY.

EXECUTIVE MANSION,
Washington, January 6, 1899.

The PRESIDENT:

The Secretary of State, to whom was referred the resolution of the Senate of December 15, 1898, requesting the President "to inform the Senate, if it is consistent with the public interests, as to the progress that has been made in the examination of the surveys and the ascertainment of the feasibility and cost of the proposed ship canal through Nicaragua and in the report of the commission headed by Rear-Admiral Walker with reference thereto, and how far said commission is prepared to report progress thereon, and that he send to the Senate any report made by said commission touching such matters," has the honor to lay before the President, with a view to its transmission to the Senate in case he shall perceive no reason to the contrary, a preliminary report of the Nicaragua Canal Commission, dated December 26, 1898, containing the information desired.

Respectfully submitted.

JOHN HAY.

DEPARTMENT OF STATE,
Washington, January 4, 1899.

DEPARTMENT OF STATE,
NICARAGUA CANAL COMMISSION,
Washington, December 26, 1898.

The SECRETARY OF STATE,
Washington, D. C.

SIR: We have the honor to acknowledge the receipt of your letter of the 19th instant, inclosing a copy of a resolution of the Senate of the 15th of December, requesting a report of the progress made by this commission in investigating the question of the proper route, the feasibility and cost of construction of the Nicaragua Canal.

This commission has understood the law by which it was constituted, approved June 4, 1897, to require that all routes heretofore proposed, having any merit, are to be considered, new routes that appear to have merit are to be developed, and the entire region of canal possibilities to be examined with sufficient thoroughness to enable a just and comprehensive comparison of the various routes to be made, and the most desirable one selected; in short, to enable this commission to make a complete and exhaustive report.

With this in view, the commission visited Nicaragua, personally examined the entire canal region from ocean to ocean, and employed some seventy engineers, with their laborers and helpers, for ten months in making careful surveys and examinations of the canal region. Some meteorological and hydrological observers are still continued in Nicaragua with a view to obtain a full year of observations of that nature.

The required field work has been obtained.

The reduction of this field work, together with the compilation and comparison of former surveys, going back nearly fifty years, has been in progress for more than two months.

The commission believes that the construction of a canal across Nicaragua is entirely feasible.

The estimates for two of the best known characteristic routes have been nearly completed. These routes are known as the Maritime Canal Company's route and the Lull route. Their estimated cost is approximately $124,000,000 and $123,000,000, respectively. The assumed dimensions are considerably greater than ever before proposed, both in length of locks and in width, depth, and radius of curvature of canal. These increased dimensions have been made necessary by the demands of modern commerce, size and draft of modern ships, etc. This has necessarily made a corresponding increase in the estimated cost, and is in no way inconsistent with the estimates made from former surveys, which contemplated a much smaller and cheaper canal.

A canal of smaller dimensions, just sufficient for present needs, is being estimated for. Such a canal would cost considerably less than the estimate for a canal suitable for modern necessities, which is referred to above.

It is the opinion of this commission that of the two routes herewith estimated for the one called the Lull route is the more desirable, because it is easier of construction, presents no problems not well within good engineering precedents, and will be a safer and more reliable canal when completed. It also believes that the dimensions and form of construction preferred by the commission are better than the cheaper form with smaller dimensions, which would undoubtedly call for expensive improvements within a short time after its completion.

Both of the routes referred to above admit of variants, which may reduce the cost. These are now being considered by the commission.

The work necessary for an exhaustive discussion of and report upon the entire canal problem is being pushed as rapidly as its great magnitude permits, and when completed the report will be submitted without delay.

We are, sir, with great respect, your obedient servants,

J. G. WALKER,
Rear-Admiral, United States Navy,
President of Commission.

LEWIS M. HAUPT,
Civil Engineer, Member.

I concur with the other members of the commission in respect to the progress of the work and the feasibility of the canal; but I think, in view of the increased size of the canal estimated for and the difficulties incident to work in tropical countries, that the estimate is lower than it should be by about 20 per cent.

PETER C. HAINS,
Colonel, Corps of Engineers, Member.

55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 53.

REPORT

ON THE

INTERNATIONAL PRISON COMMISSION.

JANUARY 7, 1899.—Referred to the Committee on Education and Labor and ordered to be printed.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1899.

INTERNATIONAL PRISON COMMISSION.

DEPARTMENT OF STATE,
Washington, January 3, 1899.

SIR: I have the honor to transmit herewith, for the information and consideration of Congress, a report of the commissioner of the United States on the International Prison Commission, giving a detailed statement of his work during the past year, and of the additional work which, at the suggestion of the commission and with the approval of the Department, he has already undertaken.

The work of the commissioner is both interstate and international. The measures taken by him to solicit and diffuse information in this country concerning penal laws, methods, and agencies preventive of crime in the different States is of national value. On the other hand, the international character of the commission secures the friendly and systematic cooperation of penologists in all of the great countries of the world, and the exchange of information and experience is of mutual advantage.

The present annual appropriation of $2,000 for the commission simply suffices for the subscription of the United States and clerical and other necessary expenses. As the preparation of the reports authorized by the Department will absorb almost the entire time of the commissioner, I respectfully ask that the appropriation for the commission may be increased so as to provide for the compensation of the commissioner, and suggest the following item:

For subscription of the United States to the International Prison Commission and the expenses and compensation of the commissioner, to be expended under the direction of the Secretary of State, $5,600.

The previous report of the commission will be found in Senate Doc. No. 181, Fifty-fourth Congress, first session.

I have the honor to be, sir, your obedient servant,

JOHN HAY.

Hon. GARRET A. HOBART,
Vice-President of the United States, United States Senate.

INTERNATIONAL PRISON COMMISSION,
Washington, D. C., December 20, 1898.

SIR: As commissioner of the United States on the International Prison Commission, I have the honor to submit herewith a detailed statement of my work during the past year and the additional work which, at the suggestion of the commission and with the approval of the Department, I have already undertaken.

The amount appropriated by Congress for the purposes of the commission, including the subscription of the United States, is $2,000. This amount has been expended substantially as follows:

Subscription of the United States	$350
Contributions to the Bulletion	50
Expenses of the commissioner, room rent, and expressage	500
Typewriting, clerical work, and postage	500
Amount paid out by the commissioner for translation, the preparation of reports by experts, and the collection of information	600
Total	2,000

No provision has been made in the annual appropriations for the compensation of the commissioner for his personal service. The large amount of labor which will be necessary for the completion of the reports now undertaken and outlined in the appended statements will absorb almost the entire time of the commissioner for the ensuing fiscal year. I therefore respectfully suggest that in addition to the sum of $2,000 allowed for clerical and other expenses Congress be asked to appropriate the sum of $3,600 as compensation for the services of the commissioner.

I remain, yours, respectfully,

S. J. BARROWS.

The SECRETARY OF STATE.

INTERNATIONAL PRISON COMMISSION.

The International Prison Congress was established nearly thirty years ago through the efforts of the Government of the United States, which invited the nations of the world to organize and maintain it. The International Prison Commission is the executive arm and permanent organization of the International Prison Congress. The congress meets once in five years, and has affiliations with twenty-five different nations. The commission meets every year or every other year. It is composed of one member from each of the nations which have formally joined the commission and annually subscribe to its funds. England, France, Holland, Belgium, Switzerland, Italy, Austria-Hungary, Greece, Russia, Sweden, and the United States are among the nations officially represented.

WORK OF THE COMMISSION.

It is the work of the commission to prepare and secure reports and conduct investigations in the different countries represented by its members on every aspect of criminal law, prison administration, and the means of reducing crime through local, national, or international agencies. The proceedings of the commission and other reports are published from time to time and circulated in the various nations.

The comprehensive work of the congress and its executive commission may be seen in its departmental organization. The congress is divided into four sections:

Section 1. Relates to criminal law.

Section 2. Relates to prison administration.

Section 3. Discusses means for preventing crime.

Section 4. Relates to children and minors.

In the section on criminal law are some of the most eminent jurists in Europe. The section on prison administration is made up largely of men who have had experience as directors, superintendents, or wardens of prisons and correctional institutions. The third section, relating to the prevention of crime, covers a wide field of sociological inquiry, and brings in police and other legal agencies, together with those which are moral and educational. The fourth section, which was established at the last congress, secures the cooperation of those interested in the reformation of children and minors. Great emphasis is laid upon this educational and preventive work. Though the congress has done much to indicate better methods of prison discipline and improvement in criminal codes, it is destined to have a still greater influence in the reduction of crime through the serious study and attention which it is now giving to all preventive influences.

THE NEXT CONGRESS.

The next congress will be held at Brussels in 1900. The commission has already prepared a programme of questions which are sent to experts in different countries. The body of fact, opinion, and suggestion thus gained is printed six or eight months in advance of the congress and sent to its members. It furnishes the basis of discussion at the congress. These preliminary reports at the last congress filled some 2,500 octavo pages. The proceedings of the congress, which spends a week in discussing these reports, are comprised in several other volumes.

Coming at the close of the century, and furnishing an opportunity for historic retrospect as well as for future influence, the congress of 1900 will be one of the most important that has ever been held. The nearness of Brussels to Paris, with the attraction of the International Exposition, will undoubtedly stimulate the attendance at Brussels of many sociological and penological experts.

WORK OF UNITED STATES COMMISSIONER.

The work of the United States commissioner is threefold:

First. To secure information abroad which may be of value in the United States.

Second. To secure information in the United States which may be sent abroad, either through the congress or through its members and correspondents.

Third. To serve as a means of communication in this country between the different States in collecting and diffusing penological information.

The duties of the commissioner are thus interstate and international.

INTERSTATE COMMUNICATION.

The United States is at a great disadvantage, compared with England, France, Russia, and other highly centralized countries, in securing information on the wide range of subjects covered by the congress. There is no United States bureau of any kind where this information can be obtained. Laws, methods, correctional institutions, and preventive agencies vary in the different States. An inquiry from abroad concerning any question of procedure or practice in the United States must therefore be addressed, in addition to the Federal Government, to forty-five different States. In some States which are already provided with boards of charity and correction or prison boards, such information may sometimes be promptly furnished. In most cases, however, much time is required for its collection, and in many States there is no authorized person to whom appeal can be made. Such information should not be left merely to the hazards of volunteer correspondence. Feeling the need of official associates in each State to whom such inquiries can be addressed, the commissioner for the United States has requested the governors of the various States to designate one person in each State who shall be an associate commissioner and who shall be authorized to furnish such available information as may be desired. Thirty-nine States have responded to this request, and it is hoped that the other six will soon make similar appointments.

The following is a list of the associate commissioners already designated:

Alabama, Hon. S. B. Trapp, Montgomery.
Arkansas, Hon. E. T. McConnell, superintendent of penitentiary of Arkansas.
California, Brainard F. Smith (representative), Sacramento County.
Colorado, C. L. Stonaker, State board of charities, Denver.
Connecticut, Mr. Thomas D. Welles, Waterbury.
Delaware, ———.
Florida, Hon. L. B. Wombwell, Tallahassee.
Georgia, ———.
Idaho, Charles Van Dorn, Boise.
Illinois, Rev. F. H. Wines, Springfield.

Indiana, Hon. Thomas E. Ellison (senator), Indianapolis.
Iowa, ———.
Kansas, H. S. Landis, warden Kansas State Penitentiary, Lansing.
Kentucky, Maj. R. A. Hancock, warden of penitentiary, Frankfort.
Louisiana, Mr. Michael Heyman.
Maine, Whitman Sawyer, chairman State board of prisons, Portland.
Maryland, Goldsborough S. Griffith, 403 East Baltimore street, Baltimore.
Massachusetts, F. G. Pettigrove, secretary board of prison commissioners, Boston.
Michigan, Hon. O. M. Barnes, Lansing.
Minnesota, Hon. Henry Wolfer, warden State prison, Stillwater.
Mississippi, Hon. J. E. Sexton, Jackson.
Missouri, ———.
Montana, Mr. Frank Conley, Deer Lodge.
Nebraska, E. Harvey, Lincoln.
Nevada, L. O. Henderson, warden State prison, Nevada.
New Hampshire, Charles E. Cox, warden State Prison, Concord.
New Jersey, Edq. J. Anderson, esq., Trenton.
New York, W. M. Round, secretary New York Prison Association.
North Carolina, C. B. Denson, secretary board of charities, Raleigh.
North Dakota, N. F. Boucher, warden State Penitentiary, Bismarck.
Ohio, Joseph P. Byers, secretary board of State charities, Columbus.
Oregon, Supt. A. N. Gilbert, State Penitentiary.
Pennsylvania, Gen. Isaac J. Wistar, 269 Broad Street Station, Philadelphia.
Rhode Island, ———.
South Carolina, ———.
South Dakota, N. E. Phillips, warden State Penitentiary.
Tennessee, Matt W. Hoke, secretary board of charities, Nashville.
Texas, Hon. L. A. Whatley, superintendent of penitentiaries.
Utah, Mr. George N. Dow, warden State prison.
Vermont, L. D. Hazen, St. Johnsbury; also Egbert C. Tuttle, Rutland.
Virginia, B. W. Lynn, superintendent Penitentiary, Richmond.
Washington, Mr. John B. Catron, Walla Walla, warden State penitentiary.
West Virginia, Mr. S. A. Hawk, superintendent penitentiary, Moundsville.
Wisconsin, president of board.
Wyoming, N. D. McDonald, warden penitentiary at Laramie, Albany County.

The commissioner would emphasize the importance of this interstate communication on the whole subject of criminal law, correction institutions, preventive and child-saving work. In many States little is known about the laws, practices, or methods adopted in other States. It is an advantage of our system of local government that every State is free to try experiments in any direction it chooses. These experiments, when fairly tried, may be of the greatest value elsewhere. In this way wise laws or methods in vogue in one State are copied in others, and sometimes may be very generally adopted. While it is not the office of the commissioner to undertake the advocacy of special laws or methods, he has felt it his duty to secure and diffuse information between the different States, which he believes will be of great value to legislators, to those administering public institutions, to police authorities, and to volunteer workers in every department relating to child saving or aid for discharged convicts or other agencies for the reduction of crime.

INTERNATIONAL COMMUNICATION.

The same principle that applies to communication between the States of the Union applies also to communication on these questions with foreign countries. The reciprocity established is of the highest value. There are certain phases of important problems which have received especial attention in Europe, and from which we have a good deal to learn in this country. As an instance I may refer to the great number of organizations existing in England, France, and in some other European countries for the care of discharged convicts, especially to the methods which have been adopted in Switzerland with great success in the reduction of the number of those who are recommitted. On the other hand, other problems have received attention in the United States with successful results which have not been introduced abroad. I may refer to the development of the reformatory system as applied to adults between the ages of 21 and 30 in the United States; to the development of special houses of refuge and reformatories for juveniles; to the indeterminate sentence, the parole law, and the probation system—all of which in their development, whatever may have been their origin, have a distinctly American character. The probation system, copied from Massachusetts, has been adopted in Belgium and France with great success. Our reformatory system is to be made the subject of special inquiry and discussion at the next prison congress in Brussels in 1900, and the commissioner is securing a large body of information which will be useful in that connection.

REPORTS PREPARED.

The report on the Fifth International Prison Congress, of which 5,000 copies were printed by order of Congress, have been widely distributed in this country and placed in the most prominent libraries; but a hundred copies of this report remain to fill occasional demands.

The commissioner has also furnished for publication in the official journal of the commission, issued in French, and distributed in all the adherent countries, articles on the indeterminate sentence, on the proceedings of the National Prison Association, and has secured answers to inquiries sent to the commissioner by the officers of the Congress of Prisoners' Aid Societies and Patronage Associations, which convened in June of the present year at Antwerp.

The report of the criminal insane in the United States and in foreign countries, presented by me to the Secretary of State May 17, 1898, was by him transmitted to Congress May 21, 1898. By order of the Senate 4,000 copies were printed. (Senate Doc. No. 273, Fifty-fifth Congress, second session.) These have been widely distributed among those who are especially interested in this subject in this country and abroad. Letters of acknowledgment from foreign countries and from different

States of the Union show how these and similar investigations are welcomed by those who have the responsibility of making and administering laws and institutions.

REPORTS IN PREPARATION.

The commissioner has now in preparation reports on the following subjects:

1. A report on the prison systems of the different States of the United States. The information obtained through the associate commissioners in the different States will be edited with an appropriate introduction by the commissioner, and will furnish an interesting presentation at the close of this century of the methods in the different States in the Union.

2. A digest of the session laws of the different States for the years 1897–98, giving an abstract of all laws or parts of laws involving misdemeanors or felonies, and the penalties therefor, and all modifications of the penal code or penal system.

This report involves a large amount of labor. Not only must all the laws of the different States be carefully read to discover what new misdemeanors are designated, but the laws and statutes of previous years must be examined to determine whether laws are entirely new or simply modifications of previous statutes. Comparisons must also be made to note whether penalties have been lightened or increased, and in what respect penal methods have been changed. The commissioner is confident that this work will be of great value to legislators in different States, as it will show them the direction in which criminal law is moving in other States of the Union. At present there is no single volume which furnishes such information and such comparisons, the valuable index prepared by the New York State library to legislation in the different States being necessarily a skeleton index to the statutes, without extended comparison. The commissioner believes that the preparation of such a volume every two years, showing results of criminal legislation in the United States, would be welcomed by lawmakers and students of criminology.

3. A detailed account of the reformatory system in the United States. This report will be useful, not only in Europe, but in many States of the Union which have not yet adopted the reformatory system as illustrated in New York, Massachusetts, Pennsylvania, Illinois, Minnesota, and Ohio.

4. A report on the criminal codes and criminal procedure of France, Germany, and Belgium. In securing materal for this report the commissioner has had the advantage of the cooperation of distinguished jurists in the countries named. It will be interesting and useful for the purpose of comparison with our own laws and procedure.

5. A report on methods of caring for discharged convicts in France, translated from a French monograph on this subject.

6. A report on the indeterminate sentence and the parole law in the United States. In this report the commissioner has had the privilege of using the investigation made by the American Bar Association on this subject, and also the expert testimony of members of the National Prison Association.

7. The police systems of London and Paris. The commissioner has secured notes in regard to these police systems, especially bearing on the question of the identification of criminals.

Some of these reports will be completed at an early day. The preparation of others is less advanced, and the work of writing and editing them must be extended over the coming year.

PRELIMINARY REPORTS ON THE PROGRAMME.

The programme of questions for discussion at the next International Prison Congress, to be held in the summer of 1900, has been prepared and sent out to correspondents and experts, as already noted. The United States commissioner has undertaken to secure answers more or less extended concerning these subjects. The replies to some of them will constitute elaborate reports, while others can be more briefly dealt with.

The following is the programme as outlined:

FIRST SECTION.—*Penal legislation.*

1. What are the most practical methods of guaranteeing to the victim of a crime or misdemeanor the indemnification due him by the offender, according to the lines laid down by the Congress of Paris?

2. Should the extradition of citizens be admitted?

3. How should the limits of the authority of criminal justice be determined in relation to offenses committed in foreign countries, or committed with the assistance of natives or foreigners residing abroad?

4. Should an indeterminate sentence be applied to certain classes of delinquents, and how should it be put into operation?

5. What measures can be recommended in order more effectively to suppress the illegal extortion of hush money? Should a special procedure be adopted to prosecute this class of infractions?

SECOND SECTION.—*Penitentiary institutions.*

1. On what principles should the medical and sanitary service of prison establishments be based?

How should the regular medical supervision of the physical and mental health of the prisoners be insured?

How far should the authority of the physician extend in the solution of questions concerning the nourishment of prisoners, their clothing, their work, the punishment inflicted upon them, etc.?

2. Should the system of reformatories at present in vogue in the United States of America be recommended in the treatment of young offenders?

3. Have the trials of the system of separable confinement (whether applied as the only means of enforcing all or some of the penalties privative of liberty, or applied during the entire period or part of the period of such penalties) given results which permit the system and its various modes of application to be judged, especially in regard to the points mentioned below?

(*a*) The influence of the system upon crime and upon repetition of offenses in countries where it is employed in whole or in part.

(*b*) The effect upon the physical and mental health of prisoners who are subjected to the system for a more or less prolonged period.

4. Should recidivists be subjected to a more severe system of punishment than prisoners who are undergoing a penalty for their first offense, and what should the increase of severity be?

THIRD SECTION.—*Methods of prevention.*

1. Should the emigration or the establishment in colonies of minors who have been subjected to the system of reformatory or similar institutions be considered as among the means of preventing crime?

If this is answered in the affirmative, what is the best way of executing the plan?

2. What is the recognized influence of alcoholism upon crime in the various countries?

What special methods can be adopted to combat alcoholism in criminals?

3. To what extent and under what conditions can societies assisting released prisoners be aided by bureaus which give information and procure employment free of charge?

FOURTH SECTION.—*Provision for children and minors.*

1. Under what conditions should minors be considered habitual offenders, and how shall repetition of offense be treated in such case?

2. Should the intervention of societies of assistance be made obligatory in behalf of young offenders who have received a conditional sentence or have been reprieved, and how should such action be effected?

3. What rules should govern professional instruction in reformatory or similar institutions for children?

4. In order to insure a practical education for young offenders, as well as for children who are depraved or are only neglected, can not the system of commitment to institutions be combined with that of apprenticeship or the placing-out system in families?

Respectfully submitted.

SAMUEL J. BARROWS,
U. S. Commissioner on International Prison Commission.

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55TH CONGRESS, 3d Session. } SENATE. { DOCUMENT No. 54.

MARGARET LIVINGSTON CHANLER AND ANNA BOULIGNY.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

COPY OF A LETTER ADDRESSED TO COL. W. M. BLACK, CORPS OF ENGINEERS, BY LIEUT. COL. HENRY G. SHARPE, COMMISSARY OF SUBSISTENCE, SAN JUAN, PORTO RICO, SUGGESTING THAT STEPS BE TAKEN TO SECURE SOME FITTING TESTIMONIAL IN RECOGNITION OF THE HOSPITAL WORK PERFORMED BY MARGARET LIVINGSTON CHANLER AND ANNA BOULIGNY IN PORTO RICO DURING THE RECENT CAMPAIGN.

JANUARY 10, 1899.—Referred to the Committee on Military Affairs and ordered to be printed.

WAR DEPARTMENT,
Washington, January 9, 1899.

SIR: I have the honor to transmit herewith, for the consideration of Congress, copy of a letter addressed to Col. W. M. Black, Corps of Engineers, by Lieut. Col. Henry G. Sharpe, commissary of subsistence, San Juan, Porto Rico, suggesting that steps be taken to secure some fitting testimonial in recognition of the hospital work performed by Margaret Livingston Chanler and Anna Bouligny in Porto Rico during the recent campaign.

The proposition of Colonel Sharpe is strongly indorsed by Colonel Black and by the Major-General Commanding the Army, as will be seen from their respective indorsements, and I beg to add my commendation of the proposed measure.

Very respectfully,

R. A. ALGER,
Secretary of War.

Hon. GARRET A. HOBART,
Vice-President of the United States, President of the Senate.

HEADQUARTERS DEPARTMENT OF PORTO RICO,
OFFICE CHIEF COMMISSARY,
San Juan, Porto Rico, November 17, 1898.

MY DEAR BLACK: I know that you are fully conversant with the splendid work Miss Chanler has performed during the campaign on this island and since its termination, and now that Miss Chanler has returned home I want to ask you if there is not some way in which it

can be brought to the attention of the War Department and some fitting testimonial be made her either by the Department or Congress, or by both, for the heroic and unselfish work she has so splendidly wrought during the past seven months. The mere recital of it should suffice, it seems to me, to prompt immediate action by the Department and Congress.

I think, too, that Miss Bouligny should be the recipient of some testimonial, and while not indulging any comparisons, I must admit that Miss Chanler was the prime mover in the work, and without her aid it could not and would not have been accomplished.

Do you think individual letters or a joint one from officers cognizant of the facts should be sent the Adjutant-General? I think the matter should be taken in hand at once, and have written General Henry, Colonels Griffin, Scott, and Macomb, and have spoken to Colonel Hoff and other officers here, who agree with me.

With kind regards, I am, yours, sincerely,

HENRY G. SHARPE.

Col. W. M. BLACK,
(Care Chief of Engineers.)

HEADQUARTERS OF THE ARMY,
Washington, December 8, 1898.

Respectfully forwarded to the Adjutant-General, Headquarters of the Army.

Miss Chanler and Miss Bouligny landed at Port Ponce from the steamer *Lampasas* on July 31, and went to Ponce, where, on the same day, they began hospital work, with the assistance of the Spanish Red Cross Society, nursing American and Spanish soldiers who were then sick in various houses and temporary hospitals in Ponce established and maintained by that society.

In a very short time the entire charge of the nursing was in their hands, with only uninstructed enlisted men and Porto Rican servants as assistants. Later Miss Chanler hired a small house, at her own expense, for a hospital for sick American officers. This proving too small, she hired a larger house, to which subsequently a second had to be added.

Until September 7 these two ladies were unassisted in their labors with our sick officers and men, excepting for a period of three days, during which two American trained nurses were at Ponce. On September 7 a detachment of trained nurses arrived at Ponce, and Miss Chanler turned over to their care the hospital there, providing means herself, I am informed, for the rental and running expenses.

Misses Chanler and Boligny then went to Coamo en route for San Juan. While in Coamo they cared for a number of sick officers from General Ernst's command. As soon as San Juan was under the American flag they started a hospital there, which is still in operation.

The services of these two women were of inestimable benefit, and it is certain that through their care several valuable lives were saved and a prolonged and perhaps fatal illness averted from others.

In addition to the names mentioned herein, Col. James Allen, United States Signal Corps, and Lieut. M. C. Bucky, Fifth Artillery, would gladly testify as to the services of Miss Chanler and Miss Boligny.

They fully gave of their time, strength, and money, and exposed

themselves fearlessly to the dangers of illness from contagion and from the climatic conditions to which so many of our officers and men succumbed.

I would respectfully recommend that suitable recognition of these services be given by the United States. An appropriate medal or the thanks of the Congress would certainly be the least recognition such examples of heroic self-abnegation should receive.

W. M. BLACK,
Lieutenant-Colonel, Chief Engineer, U. S. Volunteers.

HEADQUARTERS OF THE ARMY,
Washington, D. C., December 9, 1898.

Respectfully submitted to the Secretary of War.

The action of Miss Chanler and the measures she adopted to relieve the suffering of officers and soldiers in the Porto Rican campaign I know to have been most commendable and praiseworthy. She very generously rented two commodious buildings for hospitals, paid the expenses of same, and, in addition, contributed her own personal efforts to the care and nursing of officers and soldiers, and, I have no doubt, saved the lives of many.

Such noble and generous acts, performed under circumstances of great embarrassment and danger of contracting fatal diseases prevalent at that time, I think our Government should recognize, and I recommend that appropriate medals be presented these two ladies; and in the case of Miss Chanler, on account of her contributing so largely and generously from her own private fortune, without the least hope of ever being remunerated, I further recommend that the matter be brought to the attention of Congress for such action as it may deem advisable.

NELSON A. MILES,
Major-General Commanding.

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55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 55.

OPERATIONS OF THE BUREAU OF ANIMAL INDUSTRY.

LETTER

FROM

THE SECRETARY OF AGRICULTURE,

TRANSMITTING

REPORT OF THE OPERATIONS OF THE BUREAU OF ANIMAL INDUSTRY FOR THE FISCAL YEAR ENDED JUNE 30, 1898.

JANUARY 10, 1899.—Referred to the Committee on Agriculture and Forestry and ordered to be printed.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D. C., January 9, 1899.

SIR: I have the honor to transmit herewith the report of the operations of the Bureau of Animal Industry for the fiscal year ended June 30, 1898, in compliance with the requirements of section 11 of the act approved May 29, 1884, for the establishment of that Bureau.

Very respectfully,

JAMES WILSON, *Secretary.*

The PRESIDENT OF THE SENATE.

OPERATIONS OF THE BUREAU OF ANIMAL INDUSTRY FOR THE FISCAL YEAR ENDED JUNE 30, 1898.

WORK OF THE INSPECTION DIVISION.

MEAT INSPECTION.

The increase of work in connection with meat inspection was very large during the year and required the appointment of a large number of employees. These were obtained upon certification by the Civil Service Commission, and have proved, as in the previous year, to be competent and satisfactory. Although the Bureau force of employees is enlarged from year to year, as the appropriations for the inspection work will permit, the efficiency of the employees is also increased through the examination by the Civil Service Commission, and the Bureau is thus enabled to maintain a thorough system of inspection.

A reference to the tables giving the number of animals inspected this year and for 1897 shows that the number has been greatly increased; yet it is still true that the appropriation for this Bureau is not sufficient to permit of the inspection of all meat entering into interstate commerce, although the law contemplates that all should be inspected. It is true, however, this year as last, that all of the beef exported to Europe and the greater part of the pork and other meat products exported have been inspected in accordance with the law.

During the year meat inspection has been in operation at 135 abattoirs, as against 128 for the previous year, and in 35 cities, as against 33 in 1897. This, however, does not represent the entire increase in the meat inspection, since at nearly all packing houses a larger number of animals have been inspected than in previous years.

The table following gives the number of inspections of animals before slaughter, made either in the stock yards or at the abattoirs, and shows the number inspected for official abattoirs and the number of inspections of animals for abattoirs in other cities and miscellaneous buyers; also the number condemned on this inspection at abattoirs and the number rejected in the stock yards. The number of rejected animals slaughtered and the number of these condemned will be found in the table of post-mortem inspections:

Ante-mortem inspections.

Kind of animal.	For official abattoirs in cities where inspections were made.	For abattoirs in other cities and miscellaneous buyers.	Total inspections.	Condemned at abattoirs.	Rejected in stock yards.
Cattle	4,552,919	4,675,318	9,228,237	104	27,491
Sheep	5,706,092	4,322,195	10,028,287	741	9,594
Calves	241,092	227,107	468,199	67	2,439
Hogs	20,713,863	10,896,812	31,610,675	9,679	66,061
Total	31,213,966	20,121,432	51,335,398	10,591	105,585

A comparison with the figures for 1897 shows a gain for 1898 of 1,178,212 cattle, 1,983,932 sheep, 19,216 calves, and 6,043,931 hogs, a

total gain of 9,025,291 animals. This is an increase over 1896 of 15,417,919 animals. The number of condemned animals at abattoirs was 3,275 fewer than 1897, and the number rejected in stock yards was 27,247 greater.

The number of animals inspected at time of slaughter and the number of carcasses and parts of carcasses condemned are given in the following table:

Post-mortem inspections.

Kind of animal.	Number of inspections.			Carcasses condemned.			Parts of carcasses condemned at abattoirs.
	For abattoirs.	Animals rejected in stock yards.	Total.	For abattoirs.	Animals rejected in stock yards.	Total.	
Cattle	4,418,788	14,143	4,433,181	6,900	3,118	10,018	12,591
Sheep	5,496,904	4,753	5,501,657	2,606	961	3,567	237
Calves	244,330	825	245,155	206	138	344	52
Hogs	20,893,199	43,641	20,936,840	a 69,652	7,927	77,579	b 35,250
Total	31,053,171	63,662	31,116,833	79,364	12,144	91,508	48,130

a Includes 19,978 condemned on microscopic examination.
b Includes 5,902 condemned on microscopic examination.

In addition to the above, there were killed by city inspectors 1,785 cattle, 1,509 sheep, 192 calves, and 14,698 hogs which had been rejected in the stock yards by officers of the Bureau of Animal Industry.

The meat-inspection tag or brand was placed on 14,815,753 quarters and 968,014 pieces of beef, 5,448,477 carcasses of sheep, 217,010 carcasses of calves, 680,876 carcasses of hogs, and 394,563 sacks of pork.

The meat-inspection stamp was affixed to 4,433,569 packages of beef products, 5,163 packages of mutton, and 10,145,048 packages of hog products, of which 374,131 contained microscopically examined pork.

The number of cars sealed containing inspected meat for shipment to packing houses and other places was 18,631.

There were issued 35,267 certificates for meat products which had received the ordinary inspection. These covered exports, comprising 1,256,716 quarters, 67,120 pieces, and 735,814 packages of beef, weighing 339,650,091 pounds; 5,163 packages of mutton, weighing 324,996 pounds; 39,212 hog carcasses, and 653,564 packages of pork, weighing 244,956,482 pounds.

The cost of this work was $409,138.09, which makes an average of 0.8 cent for each of the 51,335,398 ante-mortem inspections, besides covering all the subsequent work of post-mortem inspection, tagging, stamping, etc.

The cost of inspection has been growing gradually less year by year.

The average cost per head was 4¾ cents in 1893, 1¾ cents in 1894, 1.1 cents in 1895, 0.95 cent in 1896, and 0.91 cent in 1897.

For the purpose of comparison the following table is given:

Number of animals inspected before slaughter for abattoirs having inspection, 1891–1898.

Fiscal year.	Cattle.	Calves.	Sheep.	Hogs.	Total.
1891	83,891	.....	.....	.....	83,891
1892	3,167,009	59,089	583,361	.....	3,809,459
1893	3,922,174	92,947	870,512	.....	4,885,633
1894	3,862,111	96,331	1,020,764	7,964,850	12,944,056
1895	3,752,111	109,941	1,344,031	13,576,917	18,873,000
1896	4,050,011	213,575	4,710,190	14,301,963	23,275,739
1897	4,289,058	259,930	5,179,643	16,813,181	26,541,812
1898	4,552,919	241,092	5,706,092	20,713,863	31,213,966

MICROSCOPIC INSPECTION OF PORK.

The number of samples of pork examined was 2,802,846, of which 1,927,838 were from carcasses and 875,008 from pieces. The following table shows that better results are obtained by making the inspection in the carcass than when samples from cured meat are examined:

Comparison of inspections from carcasses and from pieces.

Samples.	From carcasses.		From pieces.	
	Number.	Per cent.	Number.	Per cent.
Class A	1,892,131	98.148	864,042	98.747
Class B	15,729	0.816	5,064	0.579
Class C	19,978	1.036	5,902	0.674
Total	1,927,838	100	875,008	100

The samples of pork submitted for microscopic examination were classified as follows: Class A, samples in which no sign of trichinæ, living or dead, or calcified cysts are found; Class B, samples in which degenerated trichina cysts are found, but in which the body of the parasite is not recognizable; Class C, samples in which recognizable bodies, living or dead, of trichinæ are found. All hogs belonging to the latter class must be condemned and disposed of according to section 20 of the regulations dated June 14, 1895.

The number of certificates issued for microscopically examined pork was 20,158, covering shipments aggregating 373,366 packages, weighing 120,271,659 pounds. Of this quantity, 698 packages, weighing 161,303 pounds, were exported to countries not exacting a certificate of microscopic inspection.

The cost of microscopic inspection was $171,040.94, an average per specimen examined of 6.1 cents, or an average of 0.142 cent for each pound exported.

This cost per pound for the inspection of pork shows a remarkable reduction from the cost in 1897, when it was 0.256 cent. The cost in 1896 was 0.264 cent; in 1895, 0.2 cent; in 1894, 0.248 cent.

The number of samples examined increased 49 per cent over last year, the expense increased 53 per cent, and the exports increased 176 per cent.

The following table shows the exports of microscopically inspected pork for the fiscal years 1892 to 1898, inclusive:

Exports of microscopically inspected pork, 1892–1898.

Fiscal year.	To countries requiring inspection.	To countries not requiring inspection.	Total.
	Pounds.	*Pounds.*	*Pounds.*
1892	22,025,698	16,127,176	38,152,874
1893	8,059,758	12,617,652	20,677,410
1894	18,845,119	16,592,818	35,437,937
1895	39,355,230	5,739,368	45,094,598
1896	21,497,321	1,403,559	22,900,880
1897	42,570,572	1,001,783	43,572,355
1898	120,110,356	161,303	120,271,659

INSPECTION OF VESSELS AND EXPORT ANIMALS.

The following table shows for the fiscal year 1898 the number of inspections of domestic and Canadian cattle and sheep for export, the

number rejected, the number of American cattle tagged, and the number of each exported; also the number of horses, mules, and hogs exported under the supervision of the bureau inspectors. For comparison the statistics for the fiscal year 1897 are included.

Number of inspections, exportations, etc., of American and Canadian live stock for the fiscal years 1897 and 1898.

Kind of animal.	American.				Canadian.		
	Number of inspections.	Number rejected.	Number tagged.	Number exported.	Number inspected.	Number rejected.	Number exported.
1898.							
Cattle	859,346	1,438	418,694	a 400,512	19,397	5	19,392
Sheep	297,719	180	.....	b 147,907	29,497	38	29,459
Horses	.....	.....	.....	29,570	.....	.....	2,955
Mules	.....	.....	.....	221	.....	.....	.....
Hogs	.....	.....	.....	599	.....	.....	.....
1897.							
Cattle	845,116	1,565	410,379	c 390,554	13,136	12	13,124
Sheep	348,108	189	.....	d 184,596	23,289	72	23,217
Horses	.....	.....	.....	22,623	.....	.....	6,185
Mules	.....	.....	.....	100	.....	.....	.....
Hogs	.....	.....	.....	.....	.....	.....	.....

a Includes 15,920 exported from Chicago by way of Canadian ports.
b Includes 5,173 exported from Chicago by way of Canadian ports.
c Includes 5,501 shipped from Chicago by way of Montreal.
d Includes 2,231 shipped from Chicago by way of Montreal.

The number of certificates issued for exported cattle was 1,616, as against 1,563 for 1897. The number of clearances of vessels carrying live stock was 971, as against 954 in 1897.

The following table gives the number of cattle and sheep inspected at time of landing by the inspectors of the Bureau stationed in Great Britain, with the number and percentage lost in transit:

Number and percentage of cattle and sheep inspected by Bureau inspectors in Great Britain, and number and percentage lost in transit.

From—	Cattle.			Sheep.		
	Landed.	Lost in transit.		Landed.	Lost in transit.	
	Number.	*Number.*	*Per cent.*	*Number.*	*Number.*	*Per cent.*
United States	381,420	851	0.22	151,863	1,224	0.8
Canada	17,164	56	.32	27,912	394	1.39
Total	398,584	907	.23	179,775	1,618	.89

This table shows an increase of 20,898 cattle and a decrease of 9,408 sheep when compared with the report for 1897. The number of head of cattle lost in transit in 1897 was 2,323, or 0.61 per cent, as against 907 head, or 0.23 per cent, for this year. The number of sheep lost in transit in 1897 was 2,676, or 1.39 per cent, as against 1,618, or 0.89 per cent, for this year.

The cost of the inspection of export animals, the supervision of Southern cattle transportation, and the inspection of animals imported from Mexico was $101,210.55. It is estimated that half of this expense is on account of the export inspection, and, with this as a basis, the cost of inspecting the 548,419 domestic cattle and sheep exported was $50,605.28, or 9.2 cents per head. The number of inspections made on these animals in this country was 1,157,065, and in Great Britain 533,283, making a total of 1,690,348, the average cost of each inspection being 2.99 cents.

Following is a statement showing the inspection of domestic cattle and sheep for export and the number exported for 1893 and previous years:

Inspections and exports of domestic cattle and sheep, 1893 to 1898, inclusive.

Fiscal year.	Cattle.				Sheep.		
	Number of inspections.	Number rejected.	Number tagged.	Number exported.	Number of inspections.	Number rejected.	Number exported.
1898	859,346	1,438	418,694	400,512	297,719	180	147,907
1897	845,116	1,565	410,379	390,554	348,108	189	184,596
1896	815,882	1,303	377,639	365,345	733,657	893	422,608
1895	657,756	1,060	324,339	324,299	704,044	179	350,808
1894	725,243	184	360,580	363,535	135,780	.....	85,809
1893	611,542	292	280,570	289,240	.....	.....	.....

SOUTHERN CATTLE INSPECTION.

During the quarantine season of 1897 there were received and yarded in the quarantine divisions of the various stock yards 35,317 cars, containing 972,224 cattle; the number of cars cleaned and disinfected was 35,280.

In the noninfected area in Texas 225,096 cattle were inspected for the identification of brands prior to removal to other States for grazing.

INSPECTION OF IMPORTED ANIMALS.

The number of animals imported from Mexico and inspected at the ports of entry along the boundary line comprised 177,772 cattle, 64,207 sheep, 104 swine, and 3,053 goats.

There were imported from Canada for slaughter, milk production, grazing, feeding, etc., and not subject to quarantine detention, 79,907 cattle, 184,352 sheep, 374 swine, 2,998 horses, 2 goats, 8 mules, 1 deer, and 6 buffalo, of which 385 cattle, 6,867 sheep, and 217 swine were for breeding purposes.

Below is a statement of the animals imported and quarantined for the prescribed period at the different quarantine stations:

Animals imported and quarantined at different stations.

Stations.	Cattle.	Sheep.	Swine.
Littleton, Mass	1	.....	.....
Garfield, N. J	282	303	10
St. Denis, Md	10	.....	.....
Houlton, Me	43	52	1
Eastport, Me	1	.....	.....
Island Pond, Vt	13	8	.....
Beecher Falls, Vt	89	50	.....
Newport, Vt	108	.....	.....
Richford, Vt	16	.....	.....
St. Albans, Vt	62	96	.....
Rouses Point, N. Y	26	.....	.....
Ogdensburg, N. Y	144	.....	.....
Cape Vincent, N. Y	51	.....	.....
Buffalo, N. Y	85	.....	.....
Port Huron, Mich	44	.....	.....
Total	975	509	11

There were 2 dogs, 2 deer, 14 goats, and 6 camels at the Garfield Station, making a total of 1,519 animals quarantined.

TO PREVENT DISSEMINATION OF SHEEP SCAB.

In order to prevent the dissemination of scabies, it was required that sheep intended for feeding or breeding purposes should be dipped before being permitted to leave the stock yards, if they were affected with the disease or had been exposed to contagion. Accordingly, 535,501 sheep were dipped under the supervision of inspectors of this Bureau, various preparations being used for this purpose.

INSPECTION OF HORSES.

The appropriation for the coming fiscal year carries a provision "that live horses and carcasses and products thereof be entitled to the same inspection as other animals, carcasses, and products thereof" named in the bill. In accordance therewith, regulations are being formulated to govern the work of inspection of horses at abattoirs and of export horses.

WORK OF THE BIOCHEMIC DIVISION.

During the past year the routine work of the biochemic division in the preparation and shipment of tuberculin and mallein, and of ink for use in stamping meat, has continued steadily and demanded much time from the divisional force. During the winter and spring months tuberculin sufficient to inject about 5,000 animals is sent out each month, while a slightly less quantity is used during the summer. The ink used for stamping the meat continues to give satisfaction; the work is more easily performed, and at the same time considerable money has been saved.

EXPERIMENTS WITH HOG CHOLERA.

The experiments conducted in the fall of 1897 upon hog cholera and swine plague proved so encouraging that a special appropriation was made by Congress for the purpose of continuing the work during the present year. Owing to the late date of the passage of the bill making this appropriation available, the work has been somewhat delayed; besides it was necessary first to erect barns at the Bureau station, and also to make the necessary purchases of animal and other material, in order to begin the experiments on a sufficiently practical scale. Material to inject about 2,000 animals was sent to the agent of the Bureau in Iowa, where the first test is being made, and his reports already received indicate that from 75 to 80 per cent of the animals treated are saved, while the loss in herds not treated is from 80 to 85 per cent. A full report of this test will find its proper place in the report for 1898.

On account of the time required to secure a supply of this serum, the quantity so far produced has not been as great as was expected, but the results from the use of the comparatively small amount so far distributed have been so gratifying that I deem it desirable to continue the work another year. The production of serum is being steadily increased, and in the course of two or three months a large and regular output will be assured. It remains only to test the remedy upon a sufficient scale and to perfect the method of procedure.

ADDITIONAL HELP AND ROOM NEEDED.

The proper conduct of these experiments has greatly increased the work of this laboratory. While two assistants have been added to the

force, there is still need of additional help. The increased duties of the laboratory employees make it absolutely necessary that more room be provided if good results are to be obtained. The working space is so crowded that it not only inteferes with the rapid conduct of investigations of various kinds, but the excessive weight of desks, tables, cases, etc., on the floor has reached the limit of safety.

GERMAN TOYS AND COLORED GOODS POISONOUS.

In connection with an examination of those imports coming from Germany which might be injurious to the health of our people it was shown that toys and colored goods of German origin were poisonous. All of the highly painted German toys may be considered very dangerous to the health of the children of this country if the paint is sucked or chipped off and swallowed through any inadvertence.

ESTIMATING NICOTINE IN SHEEP DIPS.

Some examinations of the tobacco dips used in connection with sheep scab indicate that the methods in common use for the determination of nicotine are very misleading. Several experiments have therefore been made to find an easy and satisfactory method for estimating nicotine, and one has been worked out which is both practical and easy of execution. As the tobacco and sulphur dip is one of the most efficacious known, the importance of reliable methods for determining its strength is evident.

OBSERVATIONS RELATIVE TO TUBERCULOSIS.

The study of tuberculosis with reference to both men and animals has been continued, and the reports received from a tuberculosis sanitarium where the serum supposed to have curative properties for tuberculosis has been used to some extent indicate that in incipient stages of the disease this material is of considerable value. The results also indicate that further experiments in the line already begun should be continued, as there is a prospect of still more satisfactory results. An easy, convenient, and important method for staining and differentiating tubercle bacilli from other germs which might be confused with them has also been worked out in this laboratory.

A fact which should be emphasized and carefully considered in connection with investigations of this character is the salary paid to the individuals engaged in the study of bacterial products. These men are at all times exposed to the danger of contracting a dangerous disease which may destroy their usefulness throughout life. Under these circumstances salaries commensurate with the high character of the work required and the dangers to which they are exposed should be paid.

WORK CONTEMPLATED.

It is contemplated by this division to undertake investigations relative to Texas fever, anthrax, and other diseases of animals.

WORK OF THE DIVISION OF PATHOLOGY.

DIPPING FOR TEXAS FEVER.

Experiments in the dipping of cattle with a view to destroying the ticks which spread the infection of Texas fever have been continued,

and a substance has been found in which the cattle may be immersed without suffering any serious injury, and which will destroy all the ticks on an animal in a single dipping. This is great progress over last year's experiments, as it was then considered absolutely necessary that cattle should be dipped twice before it would be safe to send them into any territory where cattle are susceptible to Texas fever. The preparation in which the cattle are dipped is a light lubricating oil containing dissolved sulphur. During the summer experiments have been made with a view to ascertaining whether this method of treating cattle could be carried out on a large scale, and for this purpose several train loads of cattle have been dipped at Fort Worth, Tex., and shipped to various places north of the quarantine line.

Two train loads of cattle, consisting of about 500 head, were sent to the northern part of Illinois, where they were placed in pastures with susceptible cattle in order to ascertain whether the dipping had rendered them safe against transmitting the fever. The experiments have proved to be a success, in so far as all the ticks were destroyed on the dipped cattle and that no disease was transmitted by them. About 600 head have also been dipped with perfect success at Mammoth Spring, Ark. Preparations are now being made to adopt the dipping method generally, by means of which the cattle from the infected districts may be shipped north of the quarantine line during the entire year, while they are at present restricted by quarantine during ten months of the year. The importance of this measure can hardly be overestimated, and is considered by prominent stockmen and farmers to be worth millions of dollars, both to the cattle raisers below the quarantine line and to the cattle feeders and grain producers north of the line. Late in the season reports of some injuries to cattle by dipping have been received. These were due partly to the condition of the cattle and partly to the strength of the dipping mixture. Experiments are now in progress which it is believed will enable the Department to remove all difficulties.

Applications have been received to permit the establishment of a large number of dipping stations along the quarantine line, and, owing to the great importance of giving a free market to cattle from the quarantined district, it is only proper that such permits should be granted at central points where the trade is sufficient to warrant such action. This new service will, however, require a considerable increase in the inspection force as it will not be safe to allow cattle to be dipped otherwise than under expert supervision.

BLACKLEG INVESTIGATIONS.

The preparation and distribution of blackleg vaccine have been continued throughout the year, and the demand for the vaccine has increased very much. More than 355,000 doses have been distributed, and the reports sent in by the recipients of the vaccine show that the annual losses from blackleg have been reduced from an average of from 10 to 20 per cent to less than 1 per cent. This means a saving of at least $500,000 worth of cattle, and when all stock owners become familiar with the method and it is adopted throughout all the cattle-raising districts where blackleg prevails it will not alone save millions of dollars, but also tend to eradicate the disease completely.

RABIES.

In the course of the year a number of supposed cases of rabies in dogs has been brought to this laboratory for determination. In some

cases the dogs had bitten one or more persons, and it was consequently of great importance to determine whether the animals were suffering from rabies or not. In two cases it was proven that the dogs had been suffering from rabies and the health officer of the District was notified to that effect, and the five people who had been bitten by these dogs received the antirabic treatment of Pasteur.

MISCELLANEOUS WORK.

The usual routine work of examining pathological specimens sent to the Bureau from veterinary inspectors and private parties has been continued, and a number of outbreaks of infectious and contagious diseases among the domesticated animals in the vicinity of Washington City has been investigated and the owners advised as to the proper care and treatment of the animals.

WORK OF THE DAIRY DIVISION.

The general survey of the condition of the dairy industry of the country at large, which was begun upon the organization of the division, has been continued, together with inquiries as to special branches, such as the milk supply of cities and large towns. Some reports have been printed and others are in hand awaiting revision and publication.

The collection of dairy data in general continues, with a view to its proper arrangement and future use in the form of circulars of information, popular bulletins, and the like. So far as the clerical force of the office permits the material collected has been indexed for ready reference.

The routine work of the office constantly increases, including general correspondence, calls for specific information, and the preparation of manuscript for publication.

During the year there have been published two bulletins and one circular prepared in the division, besides contributions to the Yearbook of the Department and to the Annual Report of the Bureau, in all comprising 284 printed pages.

The chief and assistant chief of the division have visited during the year centers of dairy interest in twenty-one States and collected information for future use. In order that the Department might be represented at as many as possible of the annual conventions of State dairy associations and similar organizations, Mr. John H. Monrad, of Illinois, was appointed temporarily as a special agent of the division, and assisted in attending public dairy meetings. In all, twenty-four States were visited, and dairy meetings attended in nineteen of them. In this way officers and employees of the division have been enabled to meet hundreds of the representative men connected with this industry in various parts of the country, and to establish relations which will be of material future benefit to the general work.

BUTTER SHIPMENTS TO GREAT BRITAIN.

The experimental exports of butter by this Bureau to Great Britain, which were commenced in the spring of 1897, and partially reported upon a year ago, were continued until the close of the active creamery year of 1897, and resumed at the opening of the season of 1898 upon an enlarged scale. These exports have constituted the principal current work of this division during the fiscal year now reported, and have involved much detail, occupying the greater part of the time and attention of the office force. A complete report of the operations during

the commercial year of 1897 has been prepared and is ready for publication in the annual report of the Bureau for 1898.

Without anticipating the results of the present (or second) season of these trial exports, it can now be confidently stated that much additional information has been obtained in the line desired, and a decided gain is evident in the favorable impression made by butter of the first quality from creameries in the United States upon the best class of the butter trade in London and Manchester.

An exhibit in the nature of an object lesson, illustrating the component parts of the various products and by-products of the dairy, has been recently prepared, and is included in the display of the Bureau of Animal Industry at the Trans-Mississippi and International Exposition, at Omaha, Nebr.

PROPOSED LINES OF WORK FOR 1898-99.

It is proposed that the work of the dairy division for the fiscal year 1898-99 shall include continuation of the different lines of effort reported as receiving attention during the years previous and still incomplete.

As already indicated, a large part of the energies of the division will be required for the experimental exports of butter, to which some trials with cheese and eggs and perhaps dressed poultry may be added. Material extension of these trial exports, in frequency, quantity, and variety of new markets, is made possible by the provisions incorporated in the current appropriation bill for this Department, in accordance with last year's recommendations, and by which the net proceeds of the sales of the products purchased for experimental export are available for a continuation or repetition of such exports.

It seems expedient to continue the weekly experimental exports of butter in progress during the summer of 1898 through the autumn and the following winter, in order to complete the trial of a full year's offerings in the market of Manchester, if not also in London.

Meanwhile it is proposed, by correspondence and the services of special agents, some voluntary, to investigate the prospects of trade in the dairy products of the United States on the islands of the Pacific, Japan, and China, and also in the West Indies and South America. It is not unlikely that such inquiries will render it desirable to make experimental exports in those directions before the close of the present fiscal year and during the next one. An appropriation similar to the one now available is therefore to be desired for the new fiscal year.

It is expected to prepare, in part, during the current year for the proper presentation of the dairy interests and products of the United States at the coming Paris Exposition.

RECOMMENDATIONS.

The following recommendations are respectfully made for the fiscal year ending June 30, 1900:

(1) A sufficient appropriation for extending and developing foreign markets for dairy products of the United States, under provisions similar to those applying to the funds now available for this purpose. The reasons for this have been already stated.

(2) That legislation be sought by which the existing system of Government inspection and certification of meats and meat products for export may be extended (with suitable modifications) to include butter, cheese, and condensed milk for export from the United States.

Reasons for such new legislation were given a year ago, as follows:

The combined efforts of the Government and commercial enterprise may succeed in the early establishment of a high reputation for American butter in desirable foreign markets; but as soon as accomplished, this becomes liable to be destroyed by the cupidity of those who, trading on this reputation, flood the same market with butter of low grade, yet still entitled to export and sale as "produce of the United States." This will disgust merchants and consumers alike and reverse the reputation of our butter, just as the fine market of Great Britain for our cheese was recently ruined by the quantity of low grade and counterfeit cheese which was exported without being marked to show its true character. The remedy seems to lie in extending and adapting the provisions of law regarding the inspection of meats exported from this country so as to make them apply to butter and cheese. The brands of "pure butter" and "full-cream cheese" should then be affixed by United States inspectors to such products only as are of a fixed minimum standard of quality. Such precautions, duly legalized and properly executed, would place the good butter and cheese of this country in foreign markets under the identifying label and guaranty of the United States Government, leaving similar merchandise of lower grade to find a place for itself upon its own merits. It should be borne in mind that dairy products of Denmark and Canada, which are the chief competitors of the United States in the markets of Great Britain, bear the inspection certificate and guaranty of quality from their respective Governments, and thereby maintain a great commercial advantage.

Such a system of inspection is much desired by the most reliable exporters, and the proposition has met with decided approval wherever considered by fair-minded interested parties.

ERADICATION OF SHEEP SCAB.

In the report for 1897 it was noted that experiments were being made by the Bureau with different sheep dips for the purpose of determining which is the most efficacious and at the same time least injurious to the animal. These experiments were concluded, and the results appear in an exhaustive article entitled "Sheep scab: Its nature and treatment," in the annual report of the Bureau of Animal Industry for 1897, mentioned elsewhere in this report. In addition to the character of dips, this article gives a full history and description of the mite causing common sheep scab, and also descriptions of the various kinds of apparatus used in dipping.

Inspectors of the Bureau have been zealous in enforcing Order No. 5, relative to the transportation of sheep having scab, which is as follows:

TRANSPORTATION OF SHEEP AFFECTED WITH SCABIES.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D. C., June 18, 1897.

To the managers and agents of railroad and transportation companies of the United States, stockmen, and others:

In accordance with section 7 of the act of Congress approved May 29, 1884, entitled "An act for the establishment of a Bureau of Animal Industry, to prevent the exportation of diseased cattle, and to provide means for the suppression and extirpation of pleuro-pneumonia and other contagious diseases among domestic animals," and of the act of Congress approved April 23, 1897, making appropriation for the Department of Agriculture for the fiscal year ending June 30, 1898, you are hereby notified that the contagious disease known as sheep scab, or scabies of sheep, exists among sheep in the United States, and that it is a violation of the law to receive for transportation or transport any stock affected with said disease from one State or Territory to another, or from any State into the District of Columbia, or from the District into any State. It is also a violation of the law for any person, company, or corporation to deliver for such transportation to any railroad company, or master or owner of any boat or vessel, any sheep, knowing them to be affected with said disease; and it is also unlawful for any person, company, or corporation to drive on foot or transport in private conveyance from one State or Territory to another, or from any State into the District of Columbia, or from the District into any State, any sheep, knowing them to be affected with said disease.

All transportation companies and individuals shipping, driving, or transporting sheep are requested to cooperate with this Department in enforcing the law for preventing the spread of the said disease. Inspectors of the Bureau of Animal Industry are directed to report all violations of this act which come to their attention.

In order more effectually to accomplish the object of the above-mentioned laws, it is hereby ordered that any railroad cars, boats, or other vehicles which have been used in the transportation of sheep affected with said disease shall be immediately cleaned and disinfected by the owners or by the transportation companies in whose possession said cars or vehicles may be at the time the animals are unloaded by first removing all litter and manure which they contain and then saturating the woodwork with a 5 per cent solution of crude carbolic acid in water. Inspectors of the Bureau of Animal Industry are directed to see that this order is carried into effect.

JAMES WILSON, *Secretary.*

The information which is now available for the public is sufficient to enable anyone to cure this disease with a minimum of trouble and expense. There will hereafter be no excuse for those who claim that they are unacquainted with the nature of the disease or with the method of treatment.

AGRICULTURAL ATTACHÉ AT BERLIN.

The tendency has been growing in Germany to assume that all diseased or unwholesome meat is of American origin. The Department of Agriculture having certified, through the inspection of the Bureau of Animal Industry, that all pork shipped to Germany is free from trichinæ and produced from healthy animals, the time had arrived when it became necessary to learn the truth in the matter, in order, first, to correct the error, if it existed, in the system of microscopic inspection conducted by the Bureau, or, second, to deny authoritatively the charge. Accordingly, Dr. Ch. Wardell Stiles, zoologist of this Bureau, was commissioned as agricultural attaché of the American embassy at Berlin in the latter part of March, with instructions to trace to a conclusion every such rumor or charge of German origin. The account of his work will necessarily appear in the report for the fiscal year 1899, and in that report he will be able to show that in many of the cases there is no trichinæ infection and that in others where it has existed it was not of American origin or had not been certified as microscopically inspected.

It would be rash to assert that there could have been no oversight in the inspection of 120,271,659 pounds of pork, which was the amount inspected last year, but it is certain that such errors are reduced to the minimum; and the purpose of sending Dr. Stiles abroad on this mission is to both reassure the American people and to convince the German people, so far as possible, that the most painstaking efforts are made by the Bureau to inspect all pork exported to Germany, and that our microscopic inspection is as rigid and safe as that made by any country.

PUBLICATION WORK.

A list of publications of the Bureau appears below. On March 1 a clerk was appointed to have special charge of the editorial work of the Bureau. This character of assistance has been needed for some time, as the time of the chief of the Bureau and divisional chiefs was wholly consumed in executive work or pressing investigations. One of the first duties of this assistant was the preparation of the annual report of the Bureau for the fiscal year 1897. For ten years previous to 1897 the reports of the Bureau have been issued biennially, owing principally to lack of time to compile them, but it is proposed hereafter to

issue one each year, as the law authorizes. The report for 1897 was late in reaching the printer, but it will soon be issued. Its principal contents are the usual report of the chief of the Bureau to the Secretary; a review of the contagious diseases of animals in Europe; an exhaustive article on the nature and treatment of sheep scab; the State and Territorial laws relative to contagious diseases of animals not published heretofore in the reports of the Bureau, and a complete collection of the dairy laws; also the orders issued by the Bureau since its organization.

The work on the annual report of the Bureau for 1898 is already well in hand.

An index is being made, which will embrace not only all of the publications of the Bureau but all documents of the Department which relate in any way to animal industry. This is being prepared as time can be spared from editorial work, but it will probably be ready for publication before the end of the fiscal year 1899.

NEEDS OF THE BUREAU.

In the report for last year attention was directed to the importance of an experiment station, to be the property of the Department, and also of greater laboratory facilities. The conditions have not been changed for the better, while the demand becomes more imperative. If these matters could receive the favorable action of Congress, the work of this Bureau would be greatly facilitated and the interests of public economy be subserved at the same time.

PUBLICATIONS.

There have been published during the fiscal year the following reports, bulletins, pamphlets, circulars, and map:

Report of the Chief of the Bureau of Animal Industry for 1897.
The Country Slaughterhouse as a Factor in the Spread of Diseases. (Reprint from Yearbook.)
Care of Dairy Utensils. (Reprint from Yearbook.)
Some Modern Disinfectants. (Reprint from Yearbook.)
Bureau of Animal Industry. (Reprint from Yearbook.)
Utilization of By-Products of the Dairy. (Reprint from Yearbook.)
Standard Varieties of Chickens. (Reprint Farmers' Bulletin No. 51.)
The Dairy Herd: Its Formation and Management. (Reprint Farmers' Bulletin No. 55.)
Facts About Milk. (Reprint Farmers' Bulletin No. 42.)
Hog Cholera and Swine Plague. (Reprint Farmers' Bulletin No. 24.)
Care of Milk on the Farm. (Reprint Farmers' Bulletin No. 63.)
Ducks and Geese: Standard Breeds and Management. (Reprint Farmers' Bulletin No. 64.)
Butter Making on the Farm. (Reprint Farmers' Bulletin No. 57.)
Creameries or Butter Factories. (Reprint from Twelfth and Thirteenth Annual Reports of the Bureau of Animal Industry.)
Dairy Schools. (Reprint Bulletin No. 17.)
Directions for the Pasteurization of Milk. (Revised edition, Circular No. 1.)
Some Essentials in Beef Production. (Farmers' Bulletin No. 71.)
Circular No. 20. Preventive Vaccination against Blackleg.
Circular No. 21. Directions for the use of Blackleg Vaccine.
Circular No. 22. List of Officials and Associations connected with the Dairy Interests in the United States and Canada for 1898.
Circular No. 23. Blackleg: Its Nature, Cause, and Prevention.
Bulletin No. 18. The Dairy Industry in Missouri and Kansas.
Bulletin No. 19. The Inspection of Meats for Animal Parasites.
Bulletin No. 20. The Milk Supply of Boston and other New England Cities.
Map showing the boundary line of the district infected with splenetic, or southern, fever of cattle.

The following statement shows the amount of the disbursements made for the various branches of the work for the fiscal year:

*Statement of disbursements from the appropriation for salaries and expenses, Bureau of Animal Industry, for the fiscal year ended June 30, 1898.**

	Salaries.	Traveling expenses.	Miscellaneous.	Total.
Meat inspection	$381,408.44	$716.34	$25,380.05	$407,504.83
Microscopic inspection	161,554.00	262.47	10,159.38	171,975.85
Export cattle inspection	59,076.81	715.66	3,665.34	63,457.81
Southern cattle inspection	31,371.94	5,701.36	544.10	37,617.40
Import cattle inspection	4,243.00	1,456.90	21.30	5,721.20
Washington and miscellaneous	2,185.00	1,614.23	2,335.98	6,135.21
Scientific investigations	3,549.26	2,442.69	9,749.74	15,741.69
Dairy division	1,133.72	1,477.61	7,311.30	9,922.63
Collecting information	1,171.64	625.04	.....	1,796.68
Eradication of hog cholera and swine plague	3,196.23	1,900.88	6,634.75	11,731.86
Hog cholera serum experiments	973.75	.....	4,417.93	5,391.68
Total	649,863.79	16,918.18	70,219.87	†736,996.84

* Including vouchers paid to October 1, 1898.
† Paid from the appropriation for fiscal year 1899, made available March 22, 1898, $64,446.66.

Accompanying this statement will be found a list of the names of the persons employed and an itemized statement of expenditures from the amount appropriated.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898.

STATUTORY SALARIES, BUREAU OF ANIMAL INDUSTRY.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
WASHINGTON, D. C.									
D. E. Salmon	Chief of Bureau	July 1, 1896			$4,000				
G. M. Brumbaugh	Assistant Chief	do			2,500				
Sylvester R. Burch	Chief Clerk	Jan. 1, 1897			2,000				
A. D. Melvin	Chief inspection division	July 1, 1896			2,500				
E. B. Jones	Assistant chief inspection division	Aug. 16, 1895			1,800				
H. E. Alvord	Chief dairy division	July 1, 1895			2,500				
R. A. Pearson	Assistant chief dairy division	Sept. 1, 1895			1,800				
V. A. Nörgaard	Chief pathological division	Nov. 1, 1896			2,250				
Louise Tayler	Laborer	Apr. 14, 1897		a $60.00					
Do	Assistant in pathological division.	Oct. 16, 1897			1,200				
Thomas B. Reamy	do	July 1, 1893			840				
E. A. de Schweinitz	Chief biochemic division	July 1, 1895			2,250				
Marion Dorset	Assistant biochemic division	Aug. 1, 1894			1,200				
James A. Emery	do	Aug. 1, 1895			1,200				
W. S. Stamper	do	July 1, 1896			720				
A. M. Farrington	Chief miscellaneous division	Aug. 16, 1895			2,000				
Ch. Wardell Stiles	Zoologist	July 1, 1896			2,000				
E. C. Schroeder	Superintendent experiment station.	July 1, 1894			1,800				
Charles F. Dawson	Veterinary inspector	Nov. 1, 1896			1,800				
Albert Hassall	do	July 1, 1892			1,400				
W. E. Cotton	Assistant veterinary experiment station.	Sept. 1, 1895			1,000				
H. H. Gerdes	Clerk	Apr. 1, 1897			1,800				
Andrew J. Olin	do	do			1,600				
Mary Sullivan	do	do			1,400				
Mary T. Dent	do	Mar. 1, 1893			1,200				
Joseph Abel	do	July 1, 1896			1,200				
I. C. I. Evans	do	Nov. 1, 1896			1,200				
M. H. Mahon	do	Apr. 1, 1897			1,200				
Mary G. Marshall	do	July 1, 1897			1,200				
M. N. Barnard	do	July 1, 1890			1,000				
Irving Frickey	do	Jan. 1, 1895			1,000				
Chas. D. Geddes	do	Sept. 30, 1896	Oct. 31, 1897		1,000				
Benj. G. Wasdon	do	Jan. 4, 1897			1,000				

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
SCIENTIFIC INVESTIGATIONS—continued.									
Chas. F. Dawson						Traveling expenses		$13.90	
Louise Tayler						do		1.25	
Capital Traction Co						Street-car tickets			$8.00
W. M. Galt & Co						Feed, oats, bran, and hay			28.00
E. M. Willis						Ice			185.35
International Navigation Co						Transportation, Ch. W. Stiles		157.75	
United States Electric Lighting Co.						Electric current			49.53
Mackall Bros. & Flemer						Flasks, drugs, and chemicals			171.34
James Bellwood						Boarding cattle			67.50
G. E. Stechert						Scientific books			35.05
J. Harrison Johnson						Rent of laboratory			1,200.00
Z. D. Gilman						Syringes, thermometers, and bulbs.			37.73
Rudolph, West & Co						Label holders and casters			7.73
Bausch & Lomb Optical Co						Boxes, syringes, and bottles			250.80
Lemcke & Buechner						Scientific books			5.46
Pennsylvania R. R. Co						Transportation, Nörgaard and Stiles.		121.25	
The Kuy-Scheerer Co						Syringes and needles			16.78
Wyckoff, Seamans & Benedict.						Repairing typewriters			13.10
Thos. Somerville & Sons						Repairing steam pump			28.80
Chas. R. Edmonston						Filter tubes, buckets, and pots			34.53
L. H. Hopkins						Drug mill			1.50
The Missouri Pacific Rwy. Co.						Transportation, Nörgaard and Day.		51.16	
The Baltimore and Ohio Southwestern Rwy. Co.						do		55.70	
E. Morrison Paper Co						Manila cardboard			15.00
Eimer & Arnend						Bottles and chemicals			12.70
Joseph Mathy						Sheet lead for table cover			7.90
Barber & Ross						Drug and bone mill			33.35
V. A. Nörgaard						Guinea pigs, meat, eggs, etc			7.96
Whitall, Tatum & Co						Homeopathic vials			15.05
Ch. Wardell Stiles						Zenoleum, thermometers, and drugs.			24.88

Ernest Betz						Services and materials			50.85
Jno. T. Milliken & Co						Hog cholera antitoxin			7.50
W. H. Lowdermilk & Co						Scientific books			21.85
Henry H. Brown						Photographic materials and photographs.			38.37
Edw. S. Schmid						Guinea pigs			38.50
Library Bureau						Guides and cards			81.44
Chicago and Northwestern Rwy. Co.						Transportation, V. Nörgaard		12.50	
Fremont, Elkhorn and Missouri Valley R. R. Co.						Transportation, C. M. Day		4.94	
H. C. Underwood Manufacturing Co.						Boxes			19.21
Thomas Binnix						Covering table with sheet lead			8.50
Southern Rwy. Co						Transportation, Nörgaard and Dawson.		90.65	
Chicago, Rock Island and Pacific Rwy. Co.						Transportation, C. M. Day		11.40	
Boston and Albany R. R. Co.						Transportation, Ch. W. Stiles		4.98	
Geo. A. Shehan						Lumber for tables			6.00
Fred. B. Nichols & Co						Planetary pencil sharpener			2.75
W. B. Moses & Sons						Refrigerator, desk, chairs			90.20
Jas. T. Dougherty						Guinea pigs			7.50
S. S. Shedd & Bro						Covering tables with lead			13.50
Waters-Pierce Oil Co						Paraffin, zone, and dynamo oil			105.00
The St. Joseph and Grand Island Rwy. Co.						Transportation, C. M. Day		.86	
Terre Haute and Indianapolis R. R. Co.						Transportation, V. Nörgaard		20.25	
W. A. Taggart						Boarding horse			30.42
Geo. E. Howard						Drawings of sheep			90.00
E. A. de Schweinitz						Velvets and toys for experiment.			15.93
Wm. A. Curran						Guinea pigs			1.70
San Antonio and Aransas Pass Rwy.						Transportation, V. Nörgaard		4.45	
The Texas and Pacific Rwy. Co.						do		21.20	
Rufus P. Clarke						Linen handkerchiefs for microscopes.			1.50
G. G. Cornwell & Son						Demijohns			2.00
M. Du Perow						Electric fans			24.30
John A. Power & Co						Tapping water main, and material.			55.50
Washington Gaslight Co						Gas pipe and laying same			25.00
Photochromo Engraving Co.						Line engravings, "sheep scab"			18.05
Burlington and Missouri River R. R. in Nebraska.						Transportation, C. M. Day		1.10	
International and Great Northern R. R. Co.						Transportation, V. Nörgaard		8.35	
Mrs. M. H. King						Lumber, livery, and feed			122.08

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation. Per diem.	Compensation. Per annum.	Disbursements. Miscellaneous items.	Disbursements. Salaries.	Disbursements. Traveling.	Disbursements. Miscellaneous.
SCIENTIFIC INVESTIGATIONS—continued.									
Omaha and Republican Valley Rwy. Co.						Transportation, C. M. Day		$3.18	
The Public Printer						1,000 copies Bulletin No. 19			$789.75
Total							$3,549.26	2,442.69	9,749.74
EXPERIMENT STATION. *a*									
Max F. Foerster	Architect	June 9, 1897			$1,721.50	Services	430.37		
Geo. W. Brett	Skilled laborer	Sept. 1, 1896			660.00	do	302.55		
Taylor Trice	Laborer	Sept. 10, 1894			660.00	do	302.53		
T. C. Blackiston	do	Jan. 15, 1898			660.00	do	176.13		
F. H. Phillips	do	Oct. 23, 1897			660.00	do	248.30		
W. S. Orton	do	Jan. 15, 1898	Apr. 16, 1898		660.00	do	25.00		
Robt. W. Waters	do	Mar. 31, 1898				do	150.00		
Herbert Henderson	do	Mar. 24, 1898				do	93.87		
Wm. Paten	do	do	June 30, 1898			do	93.87		
David Turner	do	Apr. 16, 1898				do	75.00		
Chas. D. Harvey	do	Apr. 1, 1898				do	7.00		
Jos. Lindner	do	May 20, 1898				do	35.81		
D. Suddath	do	Sept. 22, 1897	Oct. 21, 1897			do	60.00		
John Richards	do	June 27, 1896				do	229.12		
W. M. Galt & Co						Corn, oats, and rock salt			483.15
Danenhower & Co						Meal, bran, hay, and salt			2,017.38
H. J. Ruppert						Rent, experiment station, Benning.			200.00
E. C. Schroeder						Horseshoeing and towels			27.81
H. C. Sisson						Filling and grading for barns			348.00
H. Bradley Davidson						Rent, experiment station, Bethesda.			550.00
Mackall Bros. & Flemer						Beakers, pipettes, and drugs			42.40
J. H. Hobson						Labor and material, boiler house and tank			118.50
W. G. Offutt						Painting water tank			12.00
Saml. Lloyd						Furnishing and laying pipes, elevating tank.			67.12
H. K. Mulford Co						Guinea pigs			12.00
Max F. Foerster						Street-car fares			24.20

Chas. H. Akers						Copy of law of Arizona			26.60
Easton & Rupp						Scrapbooks and envelopes			12.34
Edw. F. Ebinger						Drayage			.39
Terre Haute and Indianapolis R. R. Co.						Transportation, D. E. Salmon		20.25	
The Missouri Pacific Rwy. Co.						Transportation, Salmon, Burch, et al.		58.84	
M. Du Perow						Electric fans			24.30
Josephine L. Camp						Copying laws of Connecticut			1.25
The Chesepeake and Ohio Rwy. Co.						Transportation, Burch, Melvin, et al.		42.00	
Louisville, Evansville and St. Louis Consolidated R. R.						do		16.00	
Geo. A. Shehan						Lumber for screens			6.93
L. H. Hopkins						Spring hinges			2.00
T. S. Palmer						Photographs of ostriches			4.60
Southern California Rwy. Co.						Transportation, T. S. Palmer		10.00	
The Geo. W. Knox Express Co.						Expressage			.25
Pittsburg, Cincinnati, Chicago and St. Louis Rwy. Co.						Transportation, Burch, Melvin, et al.		15.00	
The Atchison, Topeka and Santa Fe Rwy. Co.						do		23.07	
Lake Shore and Michigan Southern Rwy. Co.						do		30.00	
Chicago, St. Paul, Minneapolis and Omaha Rwy. Co.						do		15.80	
Allegheny Valley Rwy. Co.						do		13.80	
Chicago, Milwaukee and St. Paul Rwy.						do		11.96	
Southern Pacific Co.						Transportation, T. S. Palmer		11.35	
Total							$2,185.00	1,614.23	2,335.98
SCIENTIFIC INVESTIGATIONS.									
Chas. M. Day	Assistant inspector	Nov. 19, 1894			$1,200		763.06	436.29	
Robt. H. Treacy	do	Oct. 12, 1896			1,200		66.67		
Wm. C. Shimoneck	Messenger	Apr. 3, 1897			720		330.00		
F. K. Cameron	Expert assistant	June 1, 1898		a $75.00			75.00		
Geo. M. Ruffin	Laborer	do		a 50.00			50.00		
Chas. D. Harvey						Services as plumber	35.00		
Ch. Wardell Stiles						Traveling expenses		720.92	
Victor A. Nörgaard						do		403.25	
E. A. de Schweinitz						do		271.11	
Geo. C. Faville						do		26.25	

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
DAIRY DIVISION—continued.									
W. E. Spurr						Butter			$89.28
W. H. Wray						Analysis, and freight on butter			98.63
Hilton & Nimmo						Butter			68.87
A. R. Hoard						do			121.45
Collins Jute Co						Burlap covers for butter			9.00
Vernon Creamery Co						Butter			79.92
Iowa Agricultural College						do			1,187.92
The Springfield Envelope Co						Manila envelopes			56.86
L. H. Hopkins						Screens and wire gauze			1.40
J. R. Buckelew						R. P. wove letter paper			16.80
Star Lake Cooperative Dairy Association.						Butter			161.09
The Hawley Box and Lumber Co.						Cubical butter boxes			5.60
Lake Shore and Michigan Southern Rwy.						Transportation, H. E. Alvord		$11.55	
W. H. Rose						Expressage on butter			17.95
Schreiber & Sons						Photographs of cattle			4.00
Waco and Northwestern R. R.						Transportation, H. E. Alvord		5.60	
Big Stone City Creamery Co						Butter			154.14
Pennsylvania R. R. Co						Transportation and freight		23.50	83.20
The Missouri Pacific Rwy. Co.						Transportation, H. E. Alvord		14.80	
St. Louis and San Francisco R. R. Co.						do		18.80	
Norfolk and Western Rwy. Co.						do		7.80	
Southern Rwy. Co						do		13.75	
Terre Haute and Indianapolis R. R. Co.						do		30.00	
Creamery Packing Co						Australian butter boxes			105.76
Thomas C. Walters						Imported butter			80.68
Louisville and Nashville R. R. Co.						Transportation, H. E. Alvord		18.60	
E. Morrison Paper Co						Paper clips			1.50
Geo. E. Howard						Illustrating bulletins for Dairy Division.			160.00

Ernest Betz						Services and materials			50.85
Jno. T. Milliken & Co						Hog cholera antitoxin			7.50
W. H. Lowdermilk & Co						Scientific books			21.85
Henry H. Brown						Photographic materials and photographs.			38.37
Edw. S. Schmid						Guinea pigs			38.50
Library Bureau						Guides and cards			81.44
Chicago and Northwestern Rwy. Co.						Transportation, V. Nörgaard		12.50	
Fremont, Elkhorn and Missouri Valley R. R. Co.						Transportation, C. M. Day		4.94	
H. C. Underwood Manufacturing Co.						Boxes			19.21
Thomas Binnix						Covering table with sheet lead			8.50
Southern Rwy. Co						Transportation, Nörgaard and Dawson.		90.65	
Chicago, Rock Island and Pacific Rwy. Co.						Transportation, C. M. Day		11.40	
Boston and Albany R. R. Co.						Transportation, Ch. W. Stiles		4.98	
Geo. A. Shehan						Lumber for tables			6.00
Fred. B. Nichols & Co						Planetary pencil sharpener			2.75
W. B. Moses & Sons						Refrigerator, desk, chairs			90.20
Jas. T. Dougherty						Guinea pigs			7.50
S. S. Shedd & Bro						Covering tables with lead			13.50
Waters-Pierce Oil Co						Paraffin, zone, and dynamo oil			105.00
The St. Joseph and Grand Island Rwy. Co.						Transportation, C. M. Day		.86	
Terre Haute and Indianapolis R. R. Co.						Transportation, V. Nörgaard		20.25	
W. A. Taggart						Boarding horse			30.42
Geo. E. Howard						Drawings of sheep			90.00
E. A. de Schweinitz						Velvets and toys for experiment.			15.93
Wm. A. Curran						Guinea pigs			1.70
San Antonio and Aransas Pass Rwy.						Transportation, V. Nörgaard		4.45	
The Texas and Pacific Rwy. Co.						do		21.20	
Rufus P. Clarke						Linen handkerchiefs for microscopes.			1.50
G. G. Cornwell & Son						Demijohns			2.00
M. Du Perow						Electric fans			24.30
John A. Power & Co						Tapping water main, and material.			55.50
Washington Gaslight Co.						Gas pipe and laying same			25.00
Photochromo Engraving Co.						Line engravings, "sheep scab"			18.05
Burlington and Missouri River R. R. in Nebraska.						Transportation, C. M. Day		1.10	
International and Great Northern R. R. Co.						Transportation, V. Nörgaard		8.35	
Mrs. M. H. King						Lumber, livery, and feed			122.08

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
TUBERCULIN MANUFACTURE—continued.									
Fred Hawley						Wooden boxes			$19.00
John C. Parker						Gummed labels			6.31
Total									459.14
COLLECTING INFORMATION.									
Edward Shelden	Agent	Mar. 22, 1893		$10.00			$260.00	$134.45	
Jno. T. McNeely	do	May 10, 1897	Nov. 30, 1897		$1,200		498.90	269.35	
Tooie A. Geddes	Inspector	June 16, 1896			1,400		235.80	120.48	
Chas. H. Stevens	Special agent	May 7, 1898			1,400		176.94	80.42	
The Denver and Rio Grande R. R. Co.						Transportation, J. T. McNeely		6.00	
Great Northern Rwy. Co.						Transportation, Edw. Shelden		11.60	
Erie Railroad Co.						do		18.00	
Michigan Central R. R. Co.						Transportation, C. H. Stevens		13.50	
Chicago, Milwaukee and St. Paul Rwy. Co.						do		21.24	
Total							1,171.64	625.04	
HOG CHOLERA SERUM EXPERIMENTS.									
Wm. C. Gessford et al	Laborers	Apr. 18, 1898	May 31, 1898			Services at station	247.50		
J. A. Moxley et al	do	do				do	676.25		
Thomas V. Cole	Laborer	May 4, 1898	May 31, 1898			do	2.50		
Wm. A. Scherrer	do	May 20, 1898	June 30, 1898			do	17.50		
John L. Furr	do	do	do			do	30.00		
Hillery T. Burrows						Leveling land for stables			353.43
Rudolph, West & Co.						Bolts, hasps, chains, and hinges			38.75
Thomas R. Riley						Lumber for stables			651.92
James B. Lamble						Shovels			1.50
Whitall, Tatum & Co.						Jars for serum			63.22
The Kuy-Scheerer Co.						Syringes			7.75
Geo. A. Shehan						Lumber and hauling			1,688.66
E. C. Schroeder						Messenger hire			1.00

S. S. Daish & Son						White oats			182.50
E. A. de Schweinitz						Hire horse and buggy			48.00
Z. D. Gilman						Thermometers and forceps			12.20
Mackall Bros. & Flemer						Flasks, vials, drugs, etc			144.35
The Watson-Stillman Co						Germ die and piston			20.00
Lutz & Co						Set of harness and brushes			65.00
David Pifferling						Cattle, for experiment			250.00
A. Wilson & Bro						Baled clover hay			409.30
Robt. J. Kleberg						Donkeys, for experiment			320.00
C. Becker						Set of harness and halters			149.85
The C. W. Surgical Instrument Co.						Trocars and canulas			7.50
Total							973.75		4,417.93
ERADICATION OF HOG CHOLERA AND SWINE PLAGUE. *Clarinda, Iowa.*									
John McBirney	Inspector	June 15, 1897			1,400		1,119.28	551.92	
J. I. Bagnall	Laborer	Sept. 7, 1897	Apr. 14, 1898	2.50			432.50		
J. M. Campbell	do	Sept. 6, 1897	do	2.50			470.00		
J. S. Lunstedt	do	Sept. 16, 1897	Nov. 20, 1897	2.50			125.00		
David C. Owens	do	Sept. 7, 1897	Jan. 30, 1898	2.50			267.50		
D. R. Way	do	June 21, 1897		2.00			498.00	627.51	
H. B. Waldron	do	June 17, 1897		2.00			284.00	344.37	
Do	Foreman	Sept. 15, 1897	Nov. 14, 1897	3.00					
Marion Dorset						Traveling expenses		272.17	
Kansas City, St. Joseph and Council Bluffs R. R. Co.						Transportation, M. Dorset		4.68	
The Chesapeake and Ohio Rwy. Co.						do		27.00	
Chicago, Burlington and Quincy R. R.						do		14.04	
Pennsylvania R. R. Co						do		28.50	
Burlington and Missouri River R. R. in Nebraska.						do		2.94	
The Wabash R. R. Co						do		27.75	
John McBirney						Hog mixture, lime, and labor			205.84
Marion Dorset						Hog mixture, pigs, alcohol, etc			10.75
The Kuy-Scheerer Co						Hypodermic syringes			12.00
Geo. H. Arman						Hogs for experiment			35.70
C. D. Johnson						do			34.65
F. J. Tharp						do			20.85
J. Knudsen						do			20.00
S. Hayner						do			15.00
J. M. Campbell						do			11.00
R. T. Feltch						do			10.55
R. R. Montgomery						do			2.75
Chas. Fulton						do			2.00
J. F. Cozad						do			3.00
C. A. Hultine						do			5.75

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
ERADICATION OF HOG CHOLERA AND SWINE PLAGUE—continued.									
Clarinda, Iowa—Cont'd.									
P. J. Johnson						Hogs for experiment			$7.20
A. O. Brewer						do			9.60
Mrs. Eliza McKee						do			12.10
Wm. T. Beckett						do			33.00
F. J. Borland						do			38.25
C. M. Conver						do			78.90
Clark Davison						do			278.50
I. B. Damewood						do			20.00
A. R. Clayton						do			21.00
Jas. Whitmore						do			53.40
C. H. Spalding						do			15.20
G. T. Loy						do			34.95
W. W. Montange						do			3.20
E. J. Caldwell									3.00
A. K. Christensen						Hogs for experiment			32.90
W. L. Gordon						do			2.40
J. T. Haley						do			8.26
C. H. B. Carlson						do			2.50
Amos Apple						do			3.25
H. E. Anderson						do			3.00
Jno. E. Davis						do			4.30
Mary Friess						do			4.95
C. G. Petersen						do			5.00
F. M. Manifold						do			6.00
Wm. E. Newman						do			7.00
Reuel Miller						do			13.12
Frank Johnson						do			18.76
W. W Whitlow						do			19.50
Jos. Burwell						do			7.70
H. D. Lucas						do			7.00
B. F. Ennis						do			2.50
F. W. Ammons						do			28.75
C. H. Varley						do			12.56
L. E. Dredge						do			15.75

C. M. Collier						do			63.00
D. D. Stitt						do			126.30
S. R. Frank						do			23.74
Frank Morley						do			6.88
Fred Boles						do			10.20
D. B. Holton						do			10.50
J. E. McCurdy						do			15.60
Jas. A. Bloom						do			88.20
J. D. Laughlin						do			19.68
Franklin McCurdy						do			142.01
Ambrose Beery						do			88.00
A. C. Harland						do			3.75
Edwd. Crosby						do			67.02
Isaac Mulkins						do			75
Jacob Hamm						do			1.50
T. E. Earhart						do			2.00
C. E. Worrell						do			3.00
J. S. Crosby						do			2.00
C. A. Gates						do			10.62
L. W. Good						do			8.00
Frank Brokaw						do			3.00
J. D. Maxwell						do			188.98
Caleb Hall						do			5.60
E. N. Fowler						do			72.50
P. P. Castle						do			12.60
Jas. Whitmore						do			2.00
R. T. Johnson						do			371.45
J. W. Duncan						do			181.02
J. D. Elliott						do			170.91
J. S. McFarland						do			150.00
Prichard Bros						do			510.00
J. S. Hayes						do			142.30
T. Henry						do			2.25
N. W. Winter						do			19.76
R. D. Farrens						do			158.50
S. M. Elrick						do			166.80
David Harris						do			228.02
Ed. Hakes						do			360.00
Jno. W. Service						do			94.00
L. L. Johnston						do			155.02
J. S. Bentley						do			66.95
Edwd. Hollis						do			6.75
A. C. Jackson						do			10.00
Aug. C. Frisby						do			50.00
S. E. McAlpin						do			144.75
James Dunn						do			185.00
Saml. Hollis						do			83.15
Phil. M. Crockett						do			1.50
S. W. Kelley						do			168.00
M. R. Ausbach						do			53.80
A. A. Berry						do			161.00
W. T. Craim						do			375.01

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
TUBERCULIN MANUFACTURE—continued.									
Fred Hawley						Wooden boxes			$19.00
John C. Parker						Gummed labels			6.31
Total									459.14
COLLECTING INFORMATION.									
Edward Shelden	Agent	Mar. 22, 1893		$10.00			$260.00	$134.45	
Jno. T. McNeely	do	May 10, 1897	Nov. 30, 1897		$1,200		498.90	269.35	
Toole A. Geddes	Inspector	June 16, 1896			1,400		235.80	120.48	
Chas. H. Stevens	Special agent	May 7, 1898			1,400		176.94	80.42	
The Denver and Rio Grande R. R. Co.						Transportation, J. T. McNeely		6.00	
Great Northern Rwy. Co.						Transportation, Edw. Shelden		11.60	
Erie Railroad Co.						do		18.00	
Michigan Central R. R. Co						Transportation, C. H. Stevens		13.50	
Chicago, Milwaukee and St. Paul Rwy. Co.						do		21.24	
Total							1,171.64	625.04	
HOG CHOLERA SERUM EXPERIMENTS.									
Wm. C. Gessford et al	Laborers	Apr. 18, 1898	May 31, 1898			Services at station	247.50		
J. A. Moxley et al	do	do				do	676.25		
Thomas V. Cole	Laborer	May 4, 1898	May 31, 1898			do	2.50		
Wm. A. Scherrer	do	May 20, 1898	June 30, 1898			do	17.50		
John L. Furr	do	do	do			do	30.00		
Hillery T. Burrows						Leveling land for stables			353.43
Rudolph, West & Co.						Bolts, hasps, chains, and hinges			38.75
Thomas R. Riley						Lumber for stables			651.92
James B. Lamble						Shovels			1.50
Whitall, Tatum & Co						Jars for serum			63.22
The Kuy-Scheerer Co						Syringes			7.75
Geo. A. Shehan						Lumber and hauling			1,688.66
E. C. Schroeder						Messenger hire			1.00

S. S. Daish & Son						White oats			182.50
E. A. de Schweinitz						Hire horse and buggy			48.00
Z. D. Gilman						Thermometers and forceps			12.20
Mackall Bros. & Flemer						Flasks, vials, drugs, etc			144.35
The Watson-Stillman Co.						Germ die and piston			20.00
Lutz & Co						Set of harness and brushes			65.00
David Pifferling						Cattle, for experiment			250.00
A. Wilson & Bro.						Baled clover hay			409.80
Robt. J. Kleberg						Donkeys, for experiment			320.00
C. Becker						Set of harness and halters			149.85
The C. W. Surgical Instrument Co.						Trocars and canulas			7.50
Total							973.75		4,417.98
ERADICATION OF HOG CHOLERA AND SWINE PLAGUE.									
Clarinda, Iowa.									
John McBirney	Inspector	June 15, 1897			1,400		1,119.28	551.92	
J. I. Bagnall	Laborer	Sept. 7, 1897	Apr. 14, 1898	2.50			432.50		
J. M. Campbell	do	Sept. 6, 1897	do	2.50			470.00		
J. S. Lunstedt	do	Sept. 16, 1897	Nov. 20, 1897	2.50			125.00		
David C. Owens	do	Sept. 7, 1897	Jan. 30, 1898	2.50			267.50		
D. R. Way	do	June 21, 1897		2.00			498.00	627.51	
H. B. Waldron	do	June 17, 1897		2.00			284.00	344.37	
Do	Foreman	Sept. 15, 1897	Nov. 14, 1897	3.00					
Marion Dorset						Traveling expenses		272.17	
Kansas City, St. Joseph and Council Bluffs R. R. Co.						Transportation, M. Dorset		4.68	
The Chesapeake and Ohio Rwy. Co.						do		27.00	
Chicago, Burlington and Quincy R. R.						do		14.04	
Pennsylvania R. R. Co.						do		28.50	
Burlington and Missouri River R. R. in Nebraska.						do		2.94	
The Wabash R. R. Co						do		27.75	
John McBirney						Hog mixture, lime, and labor			205.84
Marion Dorset						Hog mixture, pigs, alcohol, etc			10.75
The Kuy-Scheerer Co						Hypodermic syringes			12.00
Geo. H. Arman						Hogs for experiment			35.70
C. D. Johnson						do			34.65
F. J. Tharp						do			20.85
J. Knudsen						do			20.00
S. Hayner						do			15.00
J. M. Campbell						do			11.00
R. T. Feltch						do			10.55
R. R. Montgomery						do			2.75
Chas. Fulton						do			2.00
J. F. Cozad						do			3.00
C. A. Hultine						do			5.75

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
EXPORT CATTLE INSPECTION—continued.									
Buffalo, N. Y.—Continued.									
Benj. Howes	Assistant inspector	Feb. 1, 1898			$1,200		$496.70		
Albert H. Hoyt	Clerk	May 1, 1893			1,000		991.67		
Geo. H. Russell	do	Nov. 10, 1897			840		534.15		
Frank J. Danahy	Tagger	May 1, 1893			720		236.64		
Jno. Mazurowski	do	July 10, 1893			720		720.00		
Frank J. Gilmore	do	Feb. 1, 1896			720		262.12		
Ernest F. Slater, jr.	do	Dec. 7, 1896			720		520.33		
Ransom Hinkson	do	Apr. 25, 1896			720		420.60		
Wm. J. Carroll	do	Apr. 16, 1894			720		118.00		
Nelson P. Hinkley						Office rent			$137.10
Wm. E. Pratt						Hog ringers			1.35
East Buffalo Live Stock Exchange Co.						Office rent			195.48
W. B. Moses & Sons						Desks and chairs			73.52
Baltimore, Md.									
H. A. Hedrick	Inspector	July 16, 1893			1,600		1,600.00		41.09
Isaac L. Ball	Clerk	Dec. 1, 1892			1,200		1,200.00		
Wm. Bennett	Tagger	Apr. 16, 1893			720		720.00		
Jos. E. Blondell	do	do			720		720.00		
Chas. Eisenreich	do	Mar. 15, 1894			720		720.00		
Wm. J. Sullivan	do	Aug. 14, 1893			720		720.00		
N. Rufus Gill						Office rent			125.00
C. O. Brockway						Metal tags			14.00
Chicago Car Seal and Manufacturing Co.						Round tin boxes			4.00
The Chesapeake and Potomac Telephone Co.						Telephone rental			78.00
Wm. E. Pratt						Hog ringers			33.80
Philadelphia, Pa.									
George Carter	Stock examiner	Jan. 1, 1894			1,000		1,000.00		16.49
Wm. J. Haughey	Laborer	Aug. 22, 1896		$2.00			116.00		
Chas. A. Schaufler						Towels, ice, and stationery			26.80
The Bell Telephone Co. of Philadelphia.						Telephone rental			26.67

Boston, Mass.									
Daniel D. Lee	Inspector	Sept. 1, 1893	Feb. 28, 1898		2,000		1,257.14		30.95
A. G. G. Richardson	do	July 1, 1896			1,400		543.93	$36.25	177.12
Do	do	Apr. 1, 1898			1,600				
Geo. W. Pope	Assistant inspector	Nov. 11, 1895			1,200		1,250.00		
Do	Inspector	Apr. 1, 1898			1,400				
Jno. G. Slee	Assistant inspector	Apr. 14, 1897			1,200		187.91		
Thomas Coyle	Stock examiner	Jan. 1, 1894			1,000		1,000.00	23.25	
Thos. Mulligan, jr	do	do	Feb. 12, 1898		900		119.82		
Jno. P. Freeman	Clerk	Nov. 6, 1893	Mar. 31, 1898		1,000		747.23		
Jno. L. Gilman	do	Apr. 1, 1898			840		210.00		
L. L. Bullard	Tagger	Mar. 1, 1892			720		718.00		
Wm. J. Corbett	do	Feb. 1, 1896			720		478.00		
Patk. F. Murphy	do	Sept. 15, 1893			720		585.30		
Geo. H. Oliver	do	Dec. 7, 1891	Jan. 21, 1898		720		289.51		
John Shannon	do	Mar. 1, 1892			720		720.00		
Ed. D. Fitzgerald	do	Mar. 10, 1898			720		224.00		
Cyrus K. Small	do	Jan. 8, 1896			720		180.00		
Jas. S. Kenneally	do	May 23, 1898			720		61.28		
Jas. G. Jeffrey	do	Feb. 1, 1898			720		55.38		
Harry F. Hume	Laborer	May 29, 1896		1.50			120.00		
Jos. F. Dean						Office rent and furniture			490.00
New England Telegraph and Telephone Co.						Telephone rental			156.00
The Boston Gaslight Co.						Gas			21.30
Wm. B. Moses & Sons						Desk, chair, and stool			27.84
Ezra B. Whittier						Walnut table			6.50
Pittsburg, Pa.									
Harry N. Waller	Assistant inspector	June 1, 1895			1,200		1,250.00		4.58
Do	Inspector	Apr. 1, 1898			1,400				
Geo. Cromley	Laborer	June 1, 1896	Sept. 8, 1897	2.00			38.00		
Walter J. Moran	do	do		2.00			79.00		
Wm. Miller	do	do		2.00			82.00		
Jno. T. Callahan	do	Sept. 3, 1897		2.00			20.00		
F. J. Gilmore						Traveling expenses		5.75	
Lake Shore and Michigan Southern Rwy. Co.						Transportation, F. J. Gilmore		5.40	
Chas. O. Brockway						Metal tags			14.00
Norfolk and Newport News.									
Geo. C. Faville	Inspector	Dec. 15, 1893			1,400		1,400.00	12.78	25.55
Sol. Miller	Stock examiner	May 1, 1894			1,000		1,000.00		
J. A. Turner & Co.						Office rent			144.00
Chas. O. Brockway						Metal tags			7.00

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
ERADICATION OF HOG CHOLERA AND SWINE PLAGUE—continued.									
Clarinda, Iowa—Cont'd.									
M. E. Miller						Hogs for experiment			$15.00
C. P. Jackson						do			10.00
Geo. W. Dudley						do			36.25
E. Beal						do			100.75
Mrs. Rosena Carr						do			85.00
G. B. Hall						do			35.40
Louis Annan						do			21.60
O. A. Anderson						do			121.72
D. A. Farrens						do			8.00
J. C. Glasgow						do			5.00
G. H. Robinson						do			64.32
Total							$3,196.23	$1,900.88	6,634.75
IMPORT CATTLE INSPECTION.									
Jno. A. Bell	Veterinary inspector	Aug. 1, 1892		$8.00			384.00	91.90	
Charles Cowie	do	Feb. 1, 1892		5.00			555.00	6.75	
G. W. Ward	do	May 1, 1892		5.00			880.00	227.08	
F. M. Perry	Inspector	Sept. 1, 1894		8.00			1,296.00	394.38	
F. L. Russell	do	do		8.00			848.00	502.55	
C. L. Morin	Assistant inspector	July 10, 1897		4.00			280.00	38.45	
Benj. Howes						Traveling expenses		46.76	
E. N. Hutchinson						do		8.70	
B. P. Wende						do		5.25	
Wm. A. Rushworth						do		14.50	
Louis A. Robinson						do		10.11	
Jno. P. O'Leary						do		110.47	
Wm. B. E. Miller						Thermometers and brushes			6.60
Charles Cowie						Street-car fares			2.70
Nelson P. Hinkley						F. J. Schriner, labor			12.00
Total							4,243.00	1,456.90	21.30

Jos. Sullivan	Tagger	Feb. 15, 1895			720		332.00		
Chesapeake and Ohio Rwy. Co.						Transportation, L. P. Cook		21.25	
Kansas City, Kans. and Mo.									
Albert Dean	Live-stock agent	Sept. 1, 1893			1,800		1,800.00	118.72	
A. B. Morse	Inspector	May 19, 1895			1,400		700.00	38.25	
Wm. D. Jorden	Live-stock agent	Jan. 1, 1894			1,200		1,200.00	589.15	
Dan. McCunningham	do	do			1,200		1,200.00	543.35	
George C. Moser	do	do			1,200		1,200.00	103.30	
Joseph Bruser	do	do			1,400		1,274.43		
Do	do	Nov. 15, 1897			1,200				
W. E. Hill	do	Jan. 1, 1894			1,400		1,274.43	170.93	
Do	do	Nov. 15, 1897			1,200				
Chas. H. Blemer	Assistant inspector	Aug. 16, 1895			1,200		1,250.00	574.45	
Do	Inspector	Apr. 1, 1898			1,400				
Harry B. Adair	Assistant inspector	Oct. 1, 1896			1,200		703.30	145.30	
Abram M. Adams	do	Feb. 12, 1897			1,200		1,156.60	198.70	
Leslie J. Allen	do	Aug. 11, 1896			1,200		570.03	221.15	
Geo. A. Bond	do	Feb. 24, 1898			1,200		419.97	88.20	
Thos. A. Bray	do	Apr. 1, 1897			1,200		900.00	212.83	
Frank C. Eells	do	Mar. 1, 1898			1,200		403.30	20.53	
Fredk. W. Hopkins	do	Feb. 15, 1896			1,200		10.00		
Peter I. Kershner	do	Feb. 3, 1897			1,200		903.30	109.76	
Jno. R. Mohler	do	Feb. 1, 1897			1,200		254.37	87.00	
S. J. Murray	do	May 23, 1898			1,200		121.98	21.01	
Jas. J. Summerfield	do	May 26, 1898			1,200		118.68	18.55	
P. H. Mullowney	do	Jan. 17, 1898			1,200		546.70	195.15	
Frank T. Shannon	do	July 15, 1895			1,200		1,173.90	156.11	
Rice P. Steddom	do	Apr. 1, 1897			1,200		496.70	267.71	
Thomas L. Rice	do	Feb. 10, 1898			1,200		305.09	42.25	
A. J. Murray	do	Mar. 21, 1898		5.00			100.00	88.80	
Thos. P. Barbour	Stock examiner	May 1, 1895	July 31, 1897		900		75.80		
W. N. D. Bird	do	Mar. 15, 1895			900		885.25	15.40	
De N. Jewett	do	Jan. 24, 1898			900		450.01	51.40	
Alexander Lobb	Live-stock agent	Feb. 15, 1894			1,200		456.53	23.65	
Do	Stock examiner	Feb. 10, 1898	Feb. 15, 1898		900				
B. L. Stine	do	Aug. 1, 1897			900		372.50		
Jos. W. Parker	Clerk	May 1, 1897			840		860.20		
Do	do	Mar. 1, 1898			900				
Albert Dean						Telegrams			42.05
Kansas City Stock Yards Co.						Office rent			180.00
The J. H. North Furniture and Carpet Co.						Office chair and stand			10.00
San Antonio and Aransas Pass Rwy. Co.						Transportation, Kershner and Eells.		18.40	
Southern California Rwy. Co.						Transportation, Hill and Mohler.		75.00	
Galveston, Harrisburg and San Antonio Rwy. Co.						Transportation, Rice, Bond, Bray et al.		168.25	

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
SOUTHERN CATTLE INSPECTION—continued.									
Kansas City, Kans. and Mo.—Continued.									
Southern Pacific Co.						Transportation, Hill, Adair, Morse et al.		$213.00	
The Atchison, Topeka and Santa Fe Rwy. Co.						Transportation, Adair		35.10	
Thos. Beynon (stage)						Transportation, Eells		15.00	
The Missouri Pacific Rwy. Co.						Transportation, Dean		4.75	
Missouri, Kansas and Texas Rwy. Co.						Transportation, Eells and Kershner.		35.20	
The Rio Grande Western Rwy. Co.						Transportation, Steddom		18.00	
Chicago, Burlington and Quincy R. R.						Transportation, Blemer		10.84	
International and Great Northern R. R. Co.						Transportation, Blemer, Bray et al.		94.65	
The Wabash R. R. Co.						Transportation, Dean and Sihler.		12.65	
Nashville, Chattanooga and St. Louis Rwy. Co.						Transportation, Sihler		12.45	
The Texas and Pacific Rwy. Co.						Transportation, Shannon		18.50	
Ft. Worth and Rio Grande Rwy. Co.						do		8.50	
Chicago Great Western Rwy. Co.						Transportation, Morse		6.65	
Memphis, Tenn.									
Thos. L. Armstrong	Inspector	May 1, 1897			$1,400		$152.14		
Tooie A. Geddes	do	July 1, 1896			1,400		114.20	25.17	
Buffalo, N. Y.									
Ransom Hinkson	Tagger	Apr. 25, 1896			720		299.40		

Norfolk, Va.									
Jos. M. Turner	Stock examiner	Mar. 10, 1896			900		900.00	9.70	
Walter E. Stoner	Tagger	Apr. 7, 1897			720		720.00	12.95	
Jos. M. Turner						Street-car fares			$37.25
Walter E. Stoner						do			18.85
Chicago, Ill.									
Benj. S. Paddock	Live-stock agent	Nov. 1, 1896			1,200		1,000.04		
Wm. C. Honan	Stock examiner	May 1, 1897			900		752.48	210.56	
Richd. E. Lyman	do	Apr. 23, 1894			900		752.48		
Arthur Stuart	do	Feb. 1, 1896			900		825.27		
Edw. Brundige	do	Jan. 16, 1894			900		415.00		
Wm. Hutton	Laborer	Aug. 11, 1896	Nov. 30, 1897	$2.00			276.00		
Hiram Grable	do	Sept. 1, 1896		2.00			334.00		
W. S. Devoe						Frame for quarantine map			2.25
John Schroeder						Hammer and tacks			2.20
Miscellaneous.									
Tooie A. Geddes	Inspector	July 1, 1896			1,400		1,100.00	222.20	
Do	do	Apr. 1, 1896			1,600				
C. J. Sihler	do	July 1, 1896			1,800		401.15	155.07	
Jas. Irwin	Stock examiner	June 15, 1897			1,000		972.75		
Herbert M. Smith	do	Aug. 19, 1897			900		110.08	30.00	
W. C. Rayen	Live-stock agent	Nov. 30, 1894		a 100.00			266.66	12.97	
Julius Huelsen						Traveling expenses		36.50	
Geo. C. Faville						do		5.45	
Jas. W. Davis						Hire, horse and buggy			112.50
James B. Lambie						Tacks			1.10
The Maurice Joyce Engraving Co.						"Southern fever" maps			11.60
A. Hoen & Co						"Southern fever" quarantine maps.			125.00
Albert J. Payne						Street-car fare			1.30
Southern Rwy. Co						Transportation, H. M. Smith		11.20	
Norfolk and Washington Steamboat Co.						do		4.00	
Pennsylvania R. R. Co						Transportation, T. A. Geddes		21.00	
The Atchison, Topeka and Santa Fe Rwy. Co.						Transportation, A. B. Morse		35.10	
Virginia and Truckee R. R.						Transportation, C. J. Sihler		18.95	
Carson and Colorado Rwy						do		16.20	
Total							31,371.94	5,701.36	544.10

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION.									
Chicago, Ill.									
W. S. Devoe	Inspector	June 1, 1893			$2,500		$2,500.00	$69.75	
O. E. Dyson	do	May 1, 1894			1,600		1,600.00		
O. J. Lanigan	do	Jan. 16, 1897			1,600		1,600.00		
Wm. A. Bruette	do	July 1, 1896			1,400		1,334.58		
Adolph M. Casper	do	Jan. 1, 1895			1,400		1,373.01		
Jos. B. Clancy	do	Aug. 15, 1893			1,400		1,400.00		
J. G. Fish	do	Jan. 16, 1895			1,400		1,396.14		
S. W. Burt	Veterinary inspector	Sept. 1, 1893			1,400		1,400.00		
O. G. Atherton	Assistant inspector	Nov. 10, 1896			1,200		1,196.70		
S. G. Burkholder	do	Jan. 1, 1897			1,200		1,200.00		
Herman Busman	do	Feb. 23, 1898			1,200		406.82		
L. Enos Day	do	Apr. 15, 1897			1,200		1,200.00		
Chas. E. McNeil	do	Mar. 4, 1898			1,200		393.33		
Albert E. Rishel	do	do			1,200		393.33		
F. L. DeWolf	do	Sept. 16, 1895			1,200		46.67		
Chas. H. Zink	do	June 1, 1896			1,200		746.98		
Geo. A. Lytle	do	Apr. 1, 1898			1,200		300.00		
Hiram W. Hawley	do	Nov. 1, 1895			1,200		1,121.30		
Ulysses G. Houck	do	Sept. 15, 1896			1,200		723.30		
James G. Hope	do	Mar. 4, 1898			1,200		336.78		
Jas. C. Keely	do	Mar. 1, 1898			1,200		327.47		
Jno. A. Kiernan	do	Nov. 10, 1896			1,200		1,190.17		
Frank B. McCall	do	do			1,200		1,163.50		
Harry D. Paxon	do	Jan. 4, 1897			1,200		1,176.84		
Wm. C. Siegmund	do	Jan. 17, 1898			1,200		510.03		
Niels C. Sorensen	do	July 15, 1895			1,200				
Do	Inspector	Apr. 1, 1898			1,400		1,207.68		
Walter J. Stewart	Assistant inspector	June 15, 1896			1,200		813.57		
Frank S. Tufts	do	Apr. 15, 1897			1,200		456.78		
Arthur R. Wake	do	Nov. 18, 1895			1,200		946.15		
Wm. H. Smith, jr	do	Apr. 1, 1898			1,200		286.81		
Louis A. Klein	do	do			1,200		237.36		
Walter E. Howe	do	Apr. 11, 1898			1,200		240.66		
Charles Batting	Clerk	Sept. 1, 1894			1,000		1,000.00		
B. A. Galligan	do	Jan. 1, 1896			1,000		1,000.00		
E. B. Luce	do	Feb. 1, 1896			1,000		1,000.00		

Geo. V. McIntyre	do	do	Dec. 31, 1897		1,000		114.00	
Charles S. Pew	do	Dec. 15, 1893			1,000		1,000.00	
S. H. Tourtellotte	do	Jan. 10, 1898			1,000		413.90	
J. J. O'Malley	do	Nov. 1, 1895			900		900.00	
Jacob K. Skinner	do	June 1, 1897			900		900.00	
Leroy Scribner	do	Dec. 15, 1896			840		814.74	
Irving W. Pew	do	Dec. 21, 1896			720		720.00	
D. H. McArthur	do	Mar. 10, 1898			840		261.33	
Norman R. Adams	Stock examiner	Nov. 1, 1895			900		873.08	
W. J. Bennett	do	Jan. 1, 1894			900		848.65	
George Best	do	do			900		669.20	
Edw. Brundige	do	Jan. 16, 1894			900		485.00	
H. D. Burdick	do	Jan. 8, 1894			900		900.00	
Thos. G. Clark	do	Jan. 1, 1894			900		900.00	
F. C. Cooley	do	Nov. 1, 1895			900		900.00	
Bryan I. Conway	do	Jan. 1, 1894	Apl. 9, 1898		900		500.32	
Jas. J. Duffley	do	do			900		900.00	
David Frisch	do	do			900		897.57	
Jas. Gardner	do	June 27, 1895			900		897.57	
Henry Grady	do	do			900		900.00	
Geo. Grafton	do	do			900		900.00	
James Hale	do	Jan. 1, 1894			900		880.00	
Thos. F. Hanley	do	June 24, 1895			900		868.12	
Geo. T. Hanton	do	June 27, 1895			900		900.00	
Wm. Harpst	do	do			900		900.00	
Wm. P. Hickey	do	Feb. 15, 1894			900		892.56	
Denis Hurley	do	Aug. 1, 1895			900		746.70	
Jos. F. Jordan	do	Jan. 1, 1894			900		900.00	
R. Kochanowski	do	do			900		900.00	
Otho D. Kortz	do	June 27, 1895			900		850.74	
Geo. Lunham	do	Jan. 1, 1894			900		900.00	
Abram M. Manny	do	July 27, 1897			900		833.95	
Jas. A. Murphy	do	Jan. 1, 1894			900		900.00	
Jno. Murphy	do	Feb. 15, 1894			900		892.67	
Terence O'Brien	do	do			900		900.00	
Thos. O'Shaughnessy	do	do			900		823.37	
G. W. Pierce	do	Jan. 8, 1894			900		897.58	
W. S. Pidcock	do	Aug. 1, 1895			900		900.00	
Wm. Proudfoot	do	Feb. 1, 1896			900		858.41	
Chas. W. Rowse	do	Nov. 11, 1895			900		900.00	
Jno. J. Ryan	do	Dec. 1, 1893			900		900.00	
Jno. W. Sarsfield	do	Jan. 1, 1894			900		900.00	
Frank Schroeder	do	June 27, 1895			900		900.00	
Fredk. L. Simpson	do	do			900		900.00	
Jno. B. Sine	do	Dec. 1, 1893			900		900.00	
Arthur Stuart	do	Feb. 1, 1896			900		550.04	
Saml. T. Smith	do	May 1, 1896			900		900.00	
Chas. O. Turner	do	Feb. 7, 1894			900		877.84	
Wm. Umbach	do	Nov. 1, 1895			900		900.00	
Thos. J. Wade	do	July 1, 1896			900		900.00	
Jno. Wallwork	do	May 1, 1895			900		900.00	
Fred. D. Waterman	do	Jan. 15, 1896			900		900.00	

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
Chicago, Ill.—Continued.									
H. B. Weller	Stock examiner	Feb. 1, 1896			$900		$900.00		
H. D. Williams	do	June 27, 1895			900		900.00		
Geo. W. Wood	do	do			900		900.00		
Theo. B. Zuendel	do	Nov. 1, 1895			900		900.00		
Richd. E. Lyman	do	Apr. 23, 1894			900		147.48		
Wm. H. Baker	Tagger	May 1, 1896			720		354.11		
W. A. Bitner	do	Feb. 15, 1898			720		270.00		
Clark C. Bone	do	Oct. 18, 1897			720		374.90		
Do	Stock examiner	June 1, 1898			900				
Wm. D. Clark	Tagger	Oct. 14, 1897			720		514.62		
Wm. Cleveland	do	Jan. 1, 1892			720		720.00		
Harry H. Cofoid	do	Nov. 18, 1895			720		712.01		
Michl. J. Dinneen	do	Sept. 10, 1894	Mar. 31, 1898		720		430.33		
Jno. Fitzgerald	do	June 27, 1895			720		696.16		
Jas. A. Flanagan	do	May 23, 1895			720		720.00		
James Foley	do	July 17, 1893			720		720.00		
Wm. Fox	do	Feb. 1, 1894			720		706.19		
M. J. Freidline	do	June 8, 1896			720		717.94		
Thos. R. Fugit	do	Feb. 1, 1896			720		720.00		
Dighton Granger	do	Oct. 18, 1897			720		13.70		
Jno. J. Garrity	do	Sept. 1, 1893			720		720.00		
Albert E. Harris	do	May 1, 1896			720		720.00		
Jas. Herriman	do	June 27, 1895			720		720.00		
DeL. Howard	do	Sept. 15, 1893			720		121.20		
Jno. Jacobson	do	Feb. 15, 1895			720		248.48		
Hulbert Jones	do	May 1, 1896	June 30, 1898		720		506.00		
Julius Kidder	do	Oct. 9, 1897			720		524.40		
Robt. G. Knipple	do	June 8, 1896			720		718.10		
J. C. Lorenzen	do	June 27, 1895			720		712.13		
Danl. Lynch	do	Aug. 15, 1893			720		715.96		
Jno. C. Massie	do	Oct. 20, 1896			720		720.00		
Michl. Metzer	do	Sept. 15, 1893			720		720.00		
M. L. McMahon	do	June 27, 1895			720		720.00		
Chas. W. Philpot	do	Oct. 18, 1897			720		506.79		
J. C. Porterfield	do	May 16, 1894			720		720.00		
Jas. M. Rainey	do	June 27, 1895			720		720.00		

Ernest E. Rue	do	June 8, 1896			720		720.00		
Wm. Ryan	do	July 17, 1893			720		642.36		
Theo. Sauer	do	Aug. 15, 1891			720		720.00		
Casper J. Schmitt	do	May 1, 1896			720		717.94		
I. Shortridge	do	Dec. 2, 1895			720		720.00		
J. E. Troughton	do	Dec. 1, 1892			720		702.03		
Frank N. Trudelle	do	Aug. 16, 1894			720		718.06		
Thos. A. White	do	June 24, 1895			720		720.00		
Patk. H. Griffin	do	Feb. 15, 1894			720		596.80		
Michl. M. Murray	do	May 16, 1894			720		177.54		
Benj. S. Paddock	Live-stock agent	Nov. 1, 1896			1,200		193.41		
Hiram Grable	Laborer	Sept. 1, 1896		$2.00			840.00		
Frank A. Paddock	do	Dec. 1, 1896		2.00			120.00		
Wm. Hutton	do	Aug. 11, 1896	Nov. 30, 1897	2.00			26.00		
W. S. Devoe						Office expenses			$80.85
E. J. Brooks & Co						Seals and wires			429.25
Gahan & Byrne						Office rent			450.00
W. W. Wilcox & Co						Excelsior stamp pads			6.50
Chicago Telephone Co						Telephone rental			350.00
Chicago Car Seal and Manufacturing Co.						Seals and wires			3.20
Rand, McNally & Co						Stationery			40.30
Cleary Bros						Hire horse and buggy and saddle horse.			201.02
O. E. Dyson						Hire saddle horse			180.00
O. J. Lanigan						do			180.00
Chas. O. Brockway						Interstate meat inspection stamps.			1,143.52
Chicago, Milwaukee and St. Paul Rwy.						Transportation, Jno. Jacobson		$11.50	
Cameron, Amberg & Co						Edison mimeograph			18.70
Edw. F. Ebinger						Drayage			.15
C. H. Hanson						Rubber canceling stamp			1.50
Marshall & Hawley						Hire horse and buggy and saddle horse.			406.33
A. P. Little						Stencil paper and ink			2.85
Jno. Schroeder						Hardware			5.27
George Grafton						Street-car fares			44.15
Geo. B. Carpenter & Co						Awnings and frames			9.75
MICROSCOPIC INSPECTION.									
Chicago, Ill.									
E. Balzer	Microscopist	Aug. 1, 1896			1,800		1,800.00		
E. L. Siggins	Inspector	Sept. 1, 1893			1,400		1,400.00		
Herman Jacobus	Tagger	June 27, 1895			720		720.00		
Wm. McKay	do	do			720		720.00		
Ellen S. Mayhew	Microscopist	July 1, 1896			900		826.37		
Bertha I. Allen	Assistant microscopist	Dec. 20, 1897			600		266.81		
Nannie D. Althof	do	Feb. 1, 1894			600		534.16		
Jennie Armstrong	do	Sept. 7, 1897	Dec. 6, 1897		600		127.17		

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION—continued.									
Chicago, Ill.—Continued.									
Nellie A. Arnold	Assistant microscopist	Aug. 20, 1897	Dec. 19, 1897		$600		$192.39		
Flora A. Ayers	do	Nov. 26, 1894			600		547.84		
Libbie Bacon	do	Aug. 20, 1897	Dec. 19, 1897		600		194.02		
Ida Bannister	do	Sept. 1, 1893			600		96.15		
Katie Barrow	do	Nov. 1, 1892			600		479.93		
Mary K. Barry	do	May 1, 1895			600		577.06		
Addie E. Benneson	do	Apr. 23, 1894			600		534.33		
Malvina A. Bixby	do	Aug. 20, 1897			600		512.01		
Elise Blanck	do	do	Dec. 19, 1897		600		195.83		
Veturia E. Boyd	do	Feb. 17, 1897			600		600.00		
Kate H. Brady	do	Dec. 1, 1892			600		598.45		
Martha E. Brandt	do	Dec. 7, 1896			600		585.16		
Laura D. Burke	do	June 22, 1891			600		373.29		
Nellie Callaghan	do	Sept. 1, 1893			600		460.65		
May E. Carlisle	do	do			600		87.50		
Tillie Cella	do	Nov. 28, 1892			600		593.53		
M. I. Charlesworth	do	Aug. 9, 1897			600		135.41		
Anna F. Clarke	do	Sept. 1, 1893			600		524.95		
M. J. Connell	do	do			600		598.28		
Nora Conway	do	Oct. 10, 1892			600		573.51		
May H. Crosby	do	Sept. 1, 1893			600		588.96		
Lillie M. Crowell	do	Feb. 1, 1894			600		595.06		
Nellie E. Damon	do	Feb. 5, 1894			600		595.15		
Nina B. Davis	do	Jan. 3, 1898			600		252.15		
Barbara Dorse	do	Dec. 26, 1894			600		554.23		
May Drom	do	Aug. 20, 1897	Dec. 19, 1897		600		161.41		
Ella B. Earle	do	Mar. 25, 1896			600		582.02		
H. Augusta Eaton	do	Apr. 23, 1894			600		455.52		
Elizth. K. Eckert	do	Mar. 16, 1895			600		588.47		
Eulalia Edwards	do	Sept. 1, 1897			600		185.95		
Clara B. Ellars	do	Sept. 20, 1897	June 23, 1898		600		400.56		
Margaret Enright	do	Sept. 11, 1893			600		512.88		
Matilda Evanson	do	Dec. 21, 1897			600		296.65		
Abbie M. Farwell	do	Feb. 15, 1895			600		560.69		
Lyde Finlen	do	Jan. 1, 1894			600		506.86		

Geo. V. McIntyre	do	do	Dec. 31, 1897		1,000		114.09	
Charles S. Pew	do	Dec. 15, 1893			1,000		1,000.00	
S. H. Tourtellotte	do	Jan. 10, 1898			1,000		413.90	
J. J. O'Malley	do	Nov. 1, 1895			900		900.00	
Jacob K. Skinner	do	June 1, 1897			900		900.00	
Leroy Scribner	do	Dec. 15, 1896			840		814.74	
Irving W. Pew	do	Dec. 21, 1896			720		720.00	
D. H. McArthur	do	Mar. 10, 1898			840		261.33	
Norman R. Adams	Stock examiner	Nov. 1, 1895			900		873.08	
W. J. Bennett	do	Jan. 1, 1894			900		848.65	
George Best	do	do			900		669.20	
Edw. Brundige	do	Jan. 16, 1894			900		485.00	
H. D. Burdick	do	Jan. 8, 1894			900		900.00	
Thos. G. Clark	do	Jan. 1, 1894			900		900.00	
F. C. Cooley	do	Nov. 1, 1895			900		900.00	
Bryan I. Conway	do	Jan. 1, 1894	Apl. 9, 1898		900		500.32	
Jas. J. Duffley	do	do			900		900.00	
David Frisch	do	do			900		897.57	
Jas. Gardner	do	June 27, 1895			900		897.57	
Henry Grady	do	do			900		900.00	
Geo. Grafton	do	do			900		900.00	
James Hale	do	Jan. 1, 1894			900		880.00	
Thos. F. Hanley	do	June 24, 1895			900		888.12	
Geo. T. Hanton	do	June 27, 1895			900		900.00	
Wm. Harpst	do	do			900		900.00	
Wm. P. Hickey	do	Feb. 15, 1894			900		892.56	
Denis Hurley	do	Aug. 1, 1895			900		746.70	
Jos. F. Jordan	do	Jan. 1, 1894			900		900.00	
R. Kochanowski	do	do			900		900.00	
Otho D. Kortz	do	June 27, 1895			900		850.74	
Geo. Lunham	do	Jan. 1, 1894			900		900.00	
Abram M. Manny	do	July 27, 1897			900		833.95	
Jas. A. Murphy	do	Jan. 1, 1894			900		900.00	
Jno. Murphy	do	Feb. 15, 1894			900		892.67	
Terence O'Brien	do	do			900		900.00	
Thos. O'Shaughnessy	do	do			900		823.37	
G. W. Pierce	do	Jan. 8, 1894			900		897.58	
W. S. Pidcock	do	Aug. 1, 1895			900		900.00	
Wm. Proudfoot	do	Feb. 1, 1896			900		858.41	
Chas. W. Rowse	do	Nov. 11, 1895			900		900.00	
Jno. J. Ryan	do	Dec. 1, 1893			900		900.00	
Jno. W. Sarsfield	do	Jan. 1, 1894			900		900.00	
Frank Schroeder	do	June 27, 1895			900		900.00	
Fredk. L. Simpson	do	do			900		900.00	
Jno. B. Sine	do	Dec. 1, 1893			900		900.00	
Arthur Stuart	do	Feb. 1, 1896			900		550.04	
Saml. T. Smith	do	May 1, 1896			900		900.00	
Chas. O. Turner	do	Feb. 7, 1894			900		877.84	
Wm. Umbach	do	Nov. 1, 1895			900		900.00	
Thos. J. Wade	do	July 1, 1896			900		900.00	
Jno. Wallwork	do	May 1, 1895			900		900.00	
Fred. D. Waterman	do	Jan. 15, 1896			900		900.00	

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION—continued.									
Chicago, Ill.—Continued.									
Josie E. O'Brien	Assistant microscopist	Sept. 7, 1897	Jan. 5, 1898		$600		$192.69		
Julia H. O'Brien	do	Aug. 9, 1897			600		473.63		
Bessie D. Ogden	do	Mar. 15, 1895			600		548.78		
Jessie G. Ogden	do	Aug. 6, 1894			600		543.86		
Genevieve Petrie	do	Dec. 20, 1897			600		309.55		
Emma Bonn / Emma Pierson	do	Aug. 20, 1897			600		412.94		
Jo. Putnam Hinds	do	Jan. 3, 1898			600		298.45		
Anna M. Quinn	do	Oct. 1, 1894			600		521.21		
A. H. Richards	do	Mar. 1, 1895			600		534.21		
Agnes B. Rieder	do	Dec. 20, 1897			600		270.08		
Laura Rieder	do	do			600		317.93		
Sarah A. Riley	do	Feb. 1, 1894			600		517.77		
Belle Ritter	do	Dec. 1, 1894			600		467.76		
Lila Robinson	do	Feb. 1, 1894			600		425.99		
Josephine Rockwell	do	Jan. 3, 1898			600		250.45		
Mabel Rockwell	do	Oct. 1, 1891			600		591.75		
Blanche Roy	do	Dec. 1, 1894			600		474.35		
Blanche Rutledge	do	Jan. 1, 1893			600		593.42		
Nellie A. Ryan	do	Oct. 10, 1892			600		391.01		
Hannah Scanlan	do	Apr. 1, 1892			600		600.00		
Tracey Schaefler	do	Jan. 1, 1893			600		30.98		
Nannie D. Strail	do	Feb. 1, 1894			600		47.80		
Hattie Schultz	do	Sept. 15, 1891			600		24.46		
Mae H. Shaw	do	Dec. 7, 1896			600		589.04		
Mary Sheehan	do	do			600		478.47		
Evalina M. Shepard	do	Feb. 19, 1897			600		545.76		
Jennie M. Shufeldt	do	Dec. 1, 1894			600		563.70		
Mary Somers	do	Feb. 16, 1895			600		84.74		
Eva M. Stevens	do	Aug. 20, 1897			600		441.22		
W. O. Sutherland	do	Feb. 1, 1894			600		577.07		
Stella Sweet	do	June 16, 1893			600		415.19		
Maggie Taylor	do	Feb. 15, 1894			600		402.95		
Virginia S. Taylor	do	Feb. 1, 1894			600		553.92		
Hattie E. Thomas	do	do			600		557.45		

Ernest E. Rue	do	June 8, 1896			720		720.00		
Wm. Ryan	do	July 17, 1893			720		642.36		
Theo. Sauer	do	Aug. 15, 1891			720		720.00		
Casper J. Schmitt	do	May 1, 1896			720		717.94		
I. Shortridge	do	Dec. 2, 1895			720		720.00		
J. E. Troughton	do	Dec. 1, 1892			720		702.03		
Frank N. Trudelle	do	Aug. 16, 1894			720		718.06		
Thos. A. White	do	June 24, 1895			720		720.00		
Patk. H. Griffin	do	Feb. 15, 1894			720		596.80		
Michl. M. Murray	do	May 16, 1894			720		177.54		
Benj. S. Paddock	Live-stock agent	Nov. 1, 1896			1,200		193.41		
Hiram Grable	Laborer	Sept. 1, 1896		$2.00			340.00		
Frank A. Paddock	do	Dec. 1, 1896		2.00			120.00		
Wm. Hutton	do	Aug. 11, 1896	Nov. 30, 1897	2.00			26.00		
W. S. Devoe						Office expenses			$80.85
E. J. Brooks & Co						Seals and wires			429.25
Gahan & Byrne						Office rent			450.00
W. W. Wilcox & Co						Excelsior stamp pads			6.50
Chicago Telephone Co						Telephone rental			350.00
Chicago Car Seal and Manufacturing Co.						Seals and wires			3.20
Rand, McNally & Co						Stationery			40.30
Cleary Bros						Hire horse and buggy and saddle horse.			201.02
O. E. Dyson						Hire saddle horse			180.00
O. J. Lanigan						do			180.00
Chas. O. Brockway						Interstate meat inspection stamps.			1,143.52
Chicago, Milwaukee and St. Paul Rwy.						Transportation, Jno. Jacobson		$11.50	
Cameron, Amberg & Co						Edison mimeograph			18.70
Edw. F. Ebinger						Drayage			.15
C. H. Hanson						Rubber canceling stamp			1.50
Marshall & Hawley						Hire horse and buggy and saddle horse.			406.33
A. P. Little						Stencil paper and ink			2.85
Jno. Schroeder						Hardware			5.27
George Grafton						Street-car fares			44.15
Geo. B. Carpenter & Co						Awnings and frames			9.75
MICROSCOPIC INSPECTION.									
Chicago, Ill.									
E. Balzer	Microscopist	Aug. 1, 1896			1,800		1,800.00		
E. L. Siggins	Inspector	Sept. 1, 1893			1,400		1,400.00		
Herman Jacobus	Tagger	June 27, 1895			720		720.00		
Wm. McKay	do	do			720		720.00		
Ellen S. Mayhew	Microscopist	July 1, 1896			900		826.37		
Bertha I. Allen	Assistant microscopist	Dec. 20, 1897			600		266.81		
Nannie D. Althof	do	Feb. 1, 1894			600		534.16		
Jennie Armstrong	do	Sept. 7, 1897	Dec. 6, 1897		600		127.17		

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION.									
Kansas City.									
Saml. E. Bennett	Inspector	June 15, 1897			$1,400		$1,450.00		
Do	do	Apr. 1, 1898			1,600				
S. L. Brooking	do	Nov. 15, 1893			1,400		1,388.59		
C. H. Davies	do	Sept. 18, 1891			1,400		1,400.00		
Jas. T. Stuart	do	Sept. 1, 1893			1,400		294.07		
Harry B. Adair	Assistant inspector	Oct. 1, 1896			1,200		496.70	$2.50	
Leslie J. Allen	do	Aug. 11, 1896			1,200		626.73		
Richd. J. Blanche	do	Feb. 23, 1898			1,200		423.30		
Jno. S. Buckley	do	Mar. 1, 1898			1,200		403.30		
Thos. W. Carnachan	do	Feb. 10, 1898			1,200		466.63		
W. Ross Cooper	do	Jan. 25, 1897			1,200		1,153.97		
Chas. H. Canfield	do	Apr. 1, 1898			1,200		300.00		
H. B. Chaney	do	do			1,200		300.00		
David P. Frame	do	Feb. 10, 1898	Feb. 25, 1898		1,200		40.00		
Harrison H. George	do	Feb. 23, 1898			1,200		423.30		
Peter I. Kershner	do	Feb. 8, 1897			1,200		296.70		
Edw. P. Schaffter	do	July 15, 1896			1,200		496.90		
Do	Inspector	Dec. 1, 1897			1,400				
Wm. A. Heck	Assistant inspector	Apr. 15, 1897			1,200		796.66		
Fred. W. Hopkins	do	Feb. 15, 1896			1,200		617.31		
Geo. A. Johnson	do	Apr. 1, 1897			1,200		896.70		
Benj. F. Kaupp	do	Feb. 10, 1896			1,200		1,200.00		
Jno. Cooper Milnes	do	Oct. 1, 1896			1,200		1,193.40		
Jno. R. Mitchell	do	Feb. 1, 1898	Feb. 8, 1898		1,200		6.67		
F. C. McCurdy	do	Apr. 1, 1896			1,200		296.70		
Don W. Patton	do	Oct. 1, 1896			1,200		1,193.40		
Rice P. Steddom	do	Apr. 1, 1897			1,200		690.28		
Charles Adams	Stock examiner	May 1, 1896			900		691.58		
E. W. Bell	do	do			900		885.00		
C. E. Blackmar	do	Feb. 1, 1898			900		372.50		
H. J. Blackwell	do	Jan. 1, 1894			900		774.70		
Chas. A. Brown	do	June 1, 1895			900		900.00		
Wm. Burgess	do	May 1, 1896			900		892.68		
Frank Canon	do	Apr. 1, 1894			900		627.50	9.01	
Geo. T. Cathel	do	Feb. 12, 1894			900		900.00		
Jno. Colgan	do	May 1, 1896	Dec. 20, 1897		900		75.80		

N. J. Connor	do	Jan. 16, 1895	Feb. 12, 1898		900		75.80		
J. D. Cooper	do	Nov. 15, 1894			900		897.57		
Josiah D. Flora	do	May 16, 1895			900		900.00		
Geo. A. Franklin	do	June 17, 1895			900		900.00		
Harry D. Freeman	do	Oct. 1, 1895			900		900.00		
Wm. Gano	do	Feb. 1, 1894			900		900.00		
Washington Gobble	do	Feb. 15, 1894			900		897.50		
R. E. L. Jackson	do	Nov. 19, 1894			900		900.00		
J. A. Liggett	do	Sept. 1, 1895			900		870.07		
Jno. L. Lobb	do	May 1, 1894			900		897.50		
M. J. Madden	do	May 1, 1896			900		900.00		
H. L. McDonald	do	May 1, 1894			900		900.00		
Porter Morgan	do	May 7, 1894			900		900.00		
J. G. Rennie	do	May 16, 1895	Dec. 20, 1897		900		330.16		
J. H. Richardson	do	May 8, 1894			900		900.00		
Saml. W. Smith	do	May 1, 1896			900		900.00		
B. L. Stine	do	Aug. 1, 1897			900		380.73		
A. E. Wagner	do	May 1, 1894			900		900.00		
W. N. West	do	Nov. 19, 1894	Dec. 20, 1897		900		73.37		
John Conlon	Clerk	Sept. 1, 1893			900		897.58		
C. H. Morse	do	Oct. 1, 1894			900		885.34		
I. N. Vance	do	Feb. 1, 1896			900		895.12		
Hiram G. Herrick	do	Mar. 25, 1898			840		226.33		
C. E. Blackmar	Tagger	Aug. 1, 1897			720		353.63		
Oliver W. Byrd	do	July 15, 1896			720		599.30		
Bernd. Cunningham	do	Dec. 15, 1893			720		712.01		
Jas. De Goler	do	Apr. 1, 1894			720		702.00		
Robt. Fleming	do	Nov. 15, 1893	July 31, 1897		720		60.60		
Albert Fowkes, sr	do	Aug. 18, 1897			720		622.28		
Wm. B. Garlick	do	Aug. 1, 1897			720		659.40		
H. B. Gooch	do	May 1, 1894	Dec. 20, 1897		720		56.74		
Wm. J. Hardenstine	do	May 1, 1896			720		454.94		
A. J. Henley	do	May 1, 1895			720		404.24		
David Hunt	do	Dec. 1, 1893			720		719.92		
August Jost	do	Aug. 18, 1897			720		624.23		
Harrison H. Knox	do	Nov. 1, 1897			720		469.51		
E. E. Laird	do	Sept. 15, 1897			720		549.64		
Wm. J. Maddock	do	May 1, 1896			720		720.00		
T. A. McLeland	do	Aug. 1, 1897			720		651.68		
Henry Morley	do	do			720		651.68		
Clayton E. Moss	do	May 1, 1896			720		297.34		
Henry A. Niles	do	do	Aug. 31, 1897		720		86.03		
Danl. S. Platt	do	Jan. 22, 1894			720		718.10		
J. W. Shannon	do	Feb. 1, 1894			720		720.00		
Jas. R. Stafford	do	Feb. 7, 1898			720		275.96		
James M. Steel	do	Aug. 1, 1897			720		657.50		
Nelson E. Weaver	do	Jan. 8, 1898			720		840.00		
Sampson Wright	do	Dec. 15, 1893	Oct. 12, 1897		720		201.52		
Robt. J. Carter	do	Mar. 1, 1898	Mar. 15, 1898		720		2.00		
James Murray	Laborer	Mar. 14, 1898		$2.00			$2.00		
Saml. E. Bennett						Office expenses			$21.43
S. L. Brooking						do			14.85

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
Kansas City—Continued.									
R. S. McCurdy						Towel supply			$8.65
Silver Laundry and Towel Co.						do			6.40
Chas. O. Brockway						Interstate stamps and cards			515.00
Dennison Manufacturing Co						Meat-inspection tags			210.00
E. J. Brooks & Co						Lead seals and wires			2,507.50
Baltimore and Ohio R. R.						Freight on stamping ink			.79
Star Union Line						Freight on meat-inspection tags			19.95
A. Klein						White soap			1.00
J. W. Timmer						Linseed oil and paints			22.15
Jas. T. Stuart						Traveling expenses		$3.40	
Cleveland, Cincinnati, Chicago and St. Louis Rwy. Co.						Transportation J. T. Stuart		21.25	
W. H. Creed						Record books			5.00
Wichita, Kans.									
W. C. Barth	Inspector	Sept. 15, 1893			$1,200		$1,200.00		7.35
Thos. W. Oshel	Stock examiner	July 1, 1897			900		877.71		
C. A. Phillips						Copying press			5.00
Worcester, Mass.									
Edw. P. Dowd	Assistant inspector	Sept. 16, 1895			1,200		496.70	7.25	1.00
Henry Leland	Tagger	Feb. 1, 1898			720		296.06		
New Brighton, Minn.									
Charles Keane	Assistant inspector	Dec. 1, 1897			1,200		876.67		2.90
Cecil K. Schafer	Tagger	Apr. 11, 1898			720		160.26		
Melvin P. Server	do	Mar. 9, 1898	Mar. 23, 1898		720		80.00		
Calvin W. von Dorn	do	Apr. 11, 1898			720		160.26		
Chas. Follmer	Laborer	Mar. 11, 1898	May 31, 1898	$2.00			10.00		
Wm. J. Gahan	do	Mar. 28, 1898	do	2.00			24.00		
Wallbloom Furniture and Carpet Co.						Desk, chairs, tables, and press			32.70

MICROSCOPIC INSPECTION.									
Kansas City.									
S. Stewart	Microscopist	July 1, 1893			1,400		1,877.10		
Jno. R. Mohler	Assistant inspector	Feb. 1, 1897			1,200		84.78		
Thos. A. Scott	Clerk	Mar. 10, 1898			840		261.33		
Geo. D. Young	do	Mar. 16, 1898			840		247.38		
Oliver W. Byrd	Tagger	July 15, 1896			720		120.70		
G. T. Mann	do	Dec. 21, 1891			720		720.00		
Saml. F. March	do	Mar. 25, 1898	July 31, 1898		720		194.00		
Morey Sappington	do	May 1, 1896			720		714.08		
Claude McFarland	Laborer	May 20, 1897		35.00			435.00		
		June 1, 1898		50.00					
Anna B. Armstrong	Assistant microscopist	Jan. 17, 1898			600		261.81		
Anna E. Bale	do	Feb. 7, 1898			600		226.88		
Ida Bannister	do	Sept. 1, 1893			600		484.16	12.50	
Amelia Barthels	do	June 20, 1892			600		575.48		
Mary Bunce	do	Sept. 1, 1893			600		549.49		
Catherine C. Burke	do	do	Jan. 31, 1898		600		29.35	12.50	
Margaret Burke	do	Feb. 7, 1898			600		215.32		
Mary L. Burke	do	Sept. 1, 1893			600		560.83		
May E. Carlisle	do	do			600		506.74		
Anna F. Clarke	do	do			600		58.65		
Anna M. Comstock	do	Feb. 7, 1898			600		233.52		
Georgie Crawford	do	Aug. 20, 1897	Dec. 19, 1897		600		192.56		
Nellie B. Crowley	do	Feb. 7, 1898			600		218.51		
Bertha L. Diller	do	Sept. 1, 1893			600		300.17		
Sallie A. Evans	do	Aug. 15, 1893			600		588.56		
Midge Frechette	do	Sept. 1, 1893			600		582.05		
Florence E. Gray	do	Dec. 20, 1897			600		281.60		
Sallie R. Griffin	do	Sept. 1, 1893			600		408.32		
Marie Hancock	do	Feb. 7, 1898			600		225.23		
Josie Hanrahan	do	Aug. 20, 1897			600		442.85		
Mary Henry	do	Sept. 1, 1893			600		562.23		
Dorothea Holt	do	Aug. 20, 1897			600		503.87		
Salie Hughes	do	May 1, 1895			600		495.15		
Hattie M. Johnson	do	Feb. 7, 1898			600		226.93		
Bessie Jones	do	do			600		228.56		
Herman J. Kelley	do	Sept. 1, 1893			600		578.34		
Tessie Linderman	do	June 23, 1892			600		573.53		
Kate Lynch	do	Jan. 10, 1898			600		266.84		
Kate Martana	do	Jan. 11, 1893			600		563.60		
Millie Martin	do	Aug. 20, 1897			600		515.39		
Elizabeth L. McCane	do	Feb. 7, 1898			600		228.46		
Mary McCarty	do	June 1, 1892			600		535.46		
Margaret Mertell	do	Sept. 1, 1893			600		596.75		
Maria P. Mullay	do	do			600		590.12		
Louise C. Olson	do	Jan. 3, 1898			600		293.38		
Nora Osborne	do	Jan. 1, 1893			600		564.00		
Jessie E. Rogers	do	Feb. 7, 1898			600		238.37		
Maud E. Rowles	do	Feb. 1, 1898			600		223.54		

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
Kansas City—Continued.									
R. S. McCurdy						Towel supply			$8.65
Silver Laundry and Towel Co.						do			6.40
Chas. O. Brockway						Interstate stamps and cards			515.00
Dennison Manufacturing Co						Meat-inspection tags			210.00
E. J. Brooks & Co						Lead seals and wires			2,507.50
Baltimore and Ohio R. R.						Freight on stamping ink			.79
Star Union Line						Freight on meat-inspection tags			19.95
A. Klein						White soap			1.00
J. W. Timmer						Linseed oil and paints			22.15
Jas. T. Stuart						Traveling expenses		$3.40	
Cleveland, Cincinnati, Chicago and St. Louis Rwy. Co.						Transportation J. T. Stuart		21.25	
W. H. Creed						Record books			5.00
Wichita, Kans.									
W. C. Barth	Inspector	Sept. 15, 1893			$1,200		$1,200.00		7.35
Thos. W. Oshel	Stock examiner	July 1, 1897			900		877.71		
C. A. Phillips						Copying press			5.00
Worcester, Mass.									
Edw. P. Dowd	Assistant inspector	Sept. 16, 1895			1,200		496.70	7.25	1.00
Henry Leland	Tagger	Feb. 1, 1898			720		296.06		
New Brighton, Minn.									
Charles Keane	Assistant inspector	Dec. 1, 1897			1,200		376.67		2.90
Cecil K. Schafer	Tagger	Apr. 11, 1898			720		160.26		
Melvin P. Server	do	Mar. 9, 1898	Mar. 23, 1898		720		30.00		
Calvin W. von Dorn	do	Apr. 11, 1898			720		160.26		
Chas. Follmer	Laborer	Mar. 11, 1898	May 31, 1898	$2.00			10.00		
Wm. J. Gahan	do	Mar. 28, 1898	do	2.00			24.00		
Wallbloom Furniture and Carpet Co.						Desk, chairs, tables, and press			32.70

MICROSCOPIC INSPECTION.									
Kansas City.									
S. Stewart	Microscopist	July 1, 1893			1,400		1,877.10		
Jno. R. Mohler	Assistant inspector	Feb. 1, 1897			1,200		84.78		
Thos. A. Scott	Clerk	Mar. 10, 1898			840		261.33		
Geo. D. Young	do	Mar. 16, 1898			840		247.33		
Oliver W. Byrd	Tagger	July 15, 1896			720		120.70		
G. T. Mann	do	Dec. 21, 1891			720		720.00		
Saml. F. March	do	Mar. 25, 1898	July 31, 1898		720		194.00		
Morey Sappington	do	May 1, 1896			720		714.03		
Claude McFarland	Laborer	May 20, 1897		35.00			435.00		
		June 1, 1898		50.00					
Anna B. Armstrong	Assistant microscopist	Jan. 17, 1898			600		261.81		
Anna E. Bale	do	Feb. 7, 1898			600		226.88		
Ida Bannister	do	Sept. 1, 1893			600		484.16	12.50	
Amelia Barthels	do	June 20, 1892			600		575.48		
Mary Bunce	do	Sept. 1, 1893			600		549.49		
Catherine C. Burke	do	do	Jan. 31, 1898		600		29.35	12.50	
Margaret Burke	do	Feb. 7, 1898			600		215.92		
Mary L. Burke	do	Sept. 1, 1893			600		560.83		
May E. Carlisle	do	do			600		506.74		
Anna F. Clarke	do	do			600		58.65		
Anna M. Comstock	do	Feb. 7, 1898			600		233.52		
Georgie Crawford	do	Aug. 20, 1897	Dec. 19, 1897		600		192.56		
Nellie B. Crowley	do	Feb. 7, 1898			600		218.51		
Bertha L. Diller	do	Sept. 1, 1893			600		300.17		
Sallie A. Evans	do	Aug. 15, 1893			600		588.56		
Midge Frechette	do	Sept. 1, 1893			600		582.05		
Florence E. Gray	do	Dec. 20, 1897			600		281.60		
Sallie R. Griffin	do	Sept. 1, 1893			600		408.32		
Marie Hancock	do	Feb. 7, 1898			600		225.23		
Josie Hanrahan	do	Aug. 20, 1897			600		442.85		
Mary Henry	do	Sept. 1, 1893			600		562.23		
Dorothea Holt	do	Aug. 20, 1897			600		503.87		
Salie Hughes	do	May 1, 1895			600		495.15		
Hattie M. Johnson	do	Feb. 7, 1898			600		226.93		
Bessie Jones	do	do			600		228.56		
Herman J. Kelley	do	Sept. 1, 1893			600		578.34		
Tessie Linderman	do	June 23, 1892			600		573.53		
Kate Lynch	do	Jan. 10, 1898			600		266.84		
Kate Martana	do	Jan. 11, 1893			600		563.60		
Millie Martin	do	Aug. 20, 1897			600		515.39		
Elizabeth L. McCane	do	Feb. 7, 1898			600		228.46		
Mary McCarty	do	June 1, 1892			600		535.46		
Margaret Mertell	do	Sept. 1, 1893			600		596.75		
Maria P. Mullay	do	do			600		590.12		
Louise C. Olson	do	Jan. 3, 1898			600		293.38		
Nora Osborne	do	Jan. 1, 1893			600		564.00		
Jessie E. Rogers	do	Feb. 7, 1898			600		238.37		
Maud E. Rowles	do	Feb. 1, 1898			600		223.54		

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
Kansas City—Continued.									
R. S. McCurdy						Towel supply			$8.65
Silver Laundry and Towel Co.						do			6.40
Chas. O. Brockway						Interstate stamps and cards			515.00
Dennison Manufacturing Co						Meat-inspection tags			210.00
E. J. Brooks & Co						Lead seals and wires			2,507.50
Baltimore and Ohio R. R.						Freight on stamping ink			.79
Star Union Line						Freight on meat-inspection tags			19.95
A. Klein						White soap			1.00
J. W. Timmer						Linseed oil and paints			22.15
Jas. T. Stuart						Traveling expenses		$3.40	
Cleveland, Cincinnati, Chicago and St. Louis Rwy. Co.						Transportation J. T. Stuart		21.25	
W. H. Creed						Record books			5.00
Wichita, Kans.									
W. C. Barth	Inspector	Sept. 15, 1893			$1,200		$1,200.00		7.35
Thos. W. Oshel	Stock examiner	July 1, 1897			900		877.71		
C. A. Phillips						Copying press			5.00
Worcester, Mass.									
Edw. P. Dowd	Assistant inspector	Sept. 16, 1895			1,200		496.70	7.25	1.00
Henry Leland	Tagger	Feb. 1, 1898			720		296.06		
New Brighton, Minn.									
Charles Keane	Assistant inspector	Dec. 1, 1897			1,200		376.67		2.90
Cecil K. Schafer	Tagger	Apr. 11, 1898			720		160.26		
Melvin P. Server	do	Mar. 9, 1898	Mar. 23, 1898		720		30.00		
Calvin W. von Dorn	do	Apr. 11, 1898			720		160.26		
Chas. Follmer	Laborer	Mar. 11, 1898	May 31, 1898	$2.00			10.00		
Wm. J. Gahan	do	Mar. 28, 1898	do	2.00			24.00		
Wallbloom Furniture and Carpet Co.						Desk, chairs, tables, and press			32.70

MICROSCOPIC INSPECTION.									
Kansas City.									
S. Stewart	Microscopist	July 1, 1893			1,400		1,377.10		
Jno. R. Mohler	Assistant inspector	Feb. 1, 1897			1,200		84.78		
Thos. A. Scott	Clerk	Mar. 10, 1898			840		261.33		
Geo. D. Young	do	Mar. 16, 1898			840		247.33		
Oliver W. Byrd	Tagger	July 15, 1896			720		120.70		
G. T. Mann	do	Dec. 21, 1891			720		720.00		
Saml. F. March	do	Mar. 25, 1898	July 31, 1898		720		194.00		
Morey Sappington	do	May 1, 1896			720		714.03		
Claude McFarland	Laborer	May 20, 1897 June 1, 1898		35.00 50.00			435.00		
Anna B. Armstrong	Assistant microscopist	Jan. 17, 1898			600		261.81		
Anna E. Bale	do	Feb. 7, 1898			600		226.88		
Ida Bannister	do	Sept. 1, 1893			600		484.16	12.50	
Amelia Barthels	do	June 20, 1892			600		575.48		
Mary Bunce	do	Sept. 1, 1893			600		549.49		
Catherine C. Burke	do	do	Jan. 31, 1898		600		29.35	12.50	
Margaret Burke	do	Feb. 7, 1898			600		215.32		
Mary L. Burke	do	Sept. 1, 1893			600		560.83		
May E. Carlisle	do	do			600		506.74		
Anna F. Clarke	do	do			600		58.65		
Anna M. Comstock	do	Feb. 7, 1898			600		233.52		
Georgie Crawford	do	Aug. 20, 1897	Dec. 19, 1897		600		192.56		
Nellie B. Crowley	do	Feb. 7, 1898			600		218.51		
Bertha L. Diller	do	Sept. 1, 1893			600		300.17		
Sallie A. Evans	do	Aug. 15, 1893			600		588.56		
Midge Frechette	do	Sept. 1, 1893			600		582.05		
Florence E. Gray	do	Dec. 20, 1897			600		281.60		
Sallie R. Griffin	do	Sept. 1, 1893			600		408.32		
Marie Hancock	do	Feb. 7, 1898			600		225.23		
Josie Hanrahan	do	Aug. 20, 1897			600		442.85		
Mary Henry	do	Sept. 1, 1893			600		562.23		
Dorothea Holt	do	Aug. 20, 1897			600		503.87		
Salie Hughes	do	May 1, 1895			600		495.15		
Hattie M. Johnson	do	Feb. 7, 1898			600		226.93		
Bessie Jones	do	do			600		228.56		
Herman J. Kelley	do	Sept. 1, 1893			600		578.34		
Tessie Linderman	do	June 23, 1892			600		573.53		
Kate Lynch	do	Jan. 10, 1898			600		266.84		
Kate Martana	do	Jan. 11, 1893			600		563.60		
Millie Martin	do	Aug. 20, 1897			600		515.39		
Elizabeth L. McCane	do	Feb. 7, 1898			600		228.46		
Mary McCarty	do	June 1, 1892			600		535.46		
Margaret Mertell	do	Sept. 1, 1893			600		596.75		
Maria P. Mullay	do	do			600		590.12		
Louise C. Olson	do	Jan. 8, 1898			600		293.38		
Nora Osborne	do	Jan. 1, 1893			600		564.00		
Jessie E. Rogers	do	Feb. 7, 1898			600		238.37		
Maud E. Rowles	do	Feb. 1, 1898			600		223.54		

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION.									
Milwaukee, Wis.									
John R. Mohler	Assistant inspector	Feb. 1, 1897			$1,200		$824.98	$11.12	
Clara Bunck	Assistant microscopist	June 1, 1898			600		534.24		
Ida M. Butler	do	Sept. 24, 1897	Mar. 24, 1898		600		270.28		
Martha Cannon	do	Jan. 2, 1895	Sept. 22, 1897		600		128.76		
Ella M. Caldwell	do	Jan. 3, 1898			600		250.51		
Anna R. Carter	do	Jan. 24, 1898	Apr. 23, 1898		600		147.84		
Louise Faust	do	Nov. 1, 1894			600		572.19		
Alice B. Fellows	do	Sept. 1, 1897	Dec. 30, 1897		600		11.41		
M. Myrtle Maynard	do	Apr. 25, 1898			600		70.88		
Emma C. Fogo	do	Feb. 25, 1898			600		191.84		
Mary Gorman	do	Aug. 26, 1891			600		505.42	4.00	
Mae B. Joslin	do	Dec. 19, 1897			600		492.44		
Frankie E. Kelly	do	Jan. 3, 1898			600		283.56		
Gertrude Kemper	do	Dec. 24, 1897	May 11, 1898		600		109.74		
Lucia R. Kemper	do	Aug. 26, 1891			600		542.08		
Harriet F. King	do	Feb. 21, 1898			600		175.47		
Clara L. Kloes	do	Jan. 16, 1893	Feb. 15, 1898		600		336.64		
Matie Kneeland	do	May 1, 1894			600		577.08		
Ida M. E. Scholz	do	Apr. 25, 1898			600		72.53		
Anastasia Lawrence	do	Sept. 7, 1897			600		268.52		
Annie M. Leberman	do	Dec. 26, 1894	Apr. 4, 1898		600		448.51		
Josephine A. Lyon	do	Dec. 15, 1894			600		588.66		
Pearl N. Maynard	do	Oct. 25, 1897			600		363.95		
Mary McShane	do	Feb. 16, 1895			600		495.60	4.50	
Jennie Morton	do	Jan. 24, 1898	Apr. 23, 1898		600		147.94		
Maggie Murphy	do	Jan. 6, 1898			600		250.46		
Sue Nichols	do	Oct. 25, 1897			600		391.11		
Mattie O'Brien	do	June 18, 1894	June 30, 1898		600		532.33		
Elizabeth A. Ryan	do	Jan. 24, 1898	Apr. 23, 1898		600		1.67		
Hattie Schultz	do	Sept. 15, 1891			600		560.80	3.75	
Ella Schwahn	do	Jan. 3, 1898			600		257.19		
Mary Somers	do	Feb. 16, 1895			600		493.83	4.50	
Nellie F. Somers	do	Jan. 10, 1898			600		247.11		
May Sonntag	do	Feb. 16, 1895	June 14, 1898		600		542.62		
Theckla E. Sonntag	do	Jan. 10, 1898			600		247.11		
Marie J. Ward	do	Jan. 24, 1898			600		246.84		

The J. H. North Furniture and Carpet Co.						Desk stools and window shades			8.30
W. H. Creed						Record books			5.00
The Atchison, Topeka and Santa Fe Rwy. Co.						Transportation L. B. Martin		12.50	
Marsh Bros						Toilet paper			1.15
Johnson & Co						Brooms			2.50
MEAT INSPECTION.									
Milwaukee, Wis.									
Albert E. Behnke	Assistant inspector	Oct. 1, 1895			1,200		1,233.68		
Do	Inspector	Apr. 1, 1898			1,400				
Herman A. Christman	Assistant inspector	Feb. 1, 1898			1,200		496.70		
Robt. H. Harrison	do	Feb. 7, 1898			1,200		476.63		
Frank D. Ketchum	do	Oct. 1, 1896			1,200		1,200.00		
Harry G. Moore	do	Jan. 1, 1896			1,200		1,200.60		
Arthur M. Rork	do	Feb. 1, 1898			1,200		496.70		
Orrin W. Snyder	do	Oct. 1, 1896			1,200		1,200.00		
Frank S. Tufts	do	Apr. 15, 1897			1,200		729.97		
Geo. J. Reinsch	Clerk	May 15, 1895			900		900.00		
Harry D. Clark	do	Mar. 10, 1898	June 24, 1898		840		219.82		
Henry Baumel	Stock examiner	Jan. 1, 1894			900		900.00		
Jas. W. Carney	do	Sept. 15, 1894			900		960.00		
Jacob J. Eichstaedt	do	June 5, 1894			900		892.56		
Christian Hiller	do	Mar. 1, 1895			900		900.00		
Thos. C. Murphy	do	June 5, 1894			900		900.00		
Edw. C. Carle	Taggers	Oct. 1, 1896			720		417.94		
Chester J. Curtis	do	June 5, 1894			720		684.58		
Chas. Elmer	do	Sept. 15, 1894			720		712.23		
Frank Mackutt	do	May 1, 1896			720		720.00		
Elbert V. Putnam	do	do			720		718.00		
Jno. P. Somers	do	Nov. 1, 1894			720		720.00		
Jos. M. Sommer	do	Oct. 1, 1896			720		720.00		
Albert E. Behnke						Livery, water, and supplies			351.46
E. J. Brooks & Co						Lead seals and wires			85.00
St. Louis, Mo.									
W. S. Cass	Inspector	Dec. 26, 1893			1,200		1,200.00		62.05
A. W. Swedberg	Assistant inspector	Dec. 10, 1895			1,200		1,200.00		
Murray J. Myers	do	Apr. 1, 1898			1,200		300.00		
Chester Miller	do	June 22, 1898			1,200		29.67		
Geo. H. Boughner	Live-stock agent	Nov. 16, 1896			900		900.00		
Adelbert G. Bibb	Stock examiner	Mar. 1, 1896			900		880.46		
Saml. Frazee	do	Feb. 20, 1895			900		838.21		
Jas. Ford	Tagger	Sept. 28, 1896			720		720.00		
Mathew O'Keefe	do	Mar. 2, 1896			720		716.00		
John I. Games	do	June 18, 1898			720		21.76		
Saml. R. Frazee, jr	Laborer	Apr. 21, 1898	June 30, 1898	$2.00			44.00		
Dennison Manufacturing Co.						Meat inspection tags			63.00
Ecoks J. Br. & Co						Lead seals and wires			127 50

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION.									
Indianapolis, Ind.									
Morris Wooden	Assistant inspector	Sept. 16, 1895			$1,200		$750.07		
Do	Inspector	Apr. 1, 1898			1,400				
Thomas Castor	Assistant inspector	Apr. 1, 1897			1,200		510.03		
Ora A. Brady	Assistant microscopist	June 15, 1897	Aug. 9, 1897		600		63.54		
Mary B. Clark	do	June 21, 1897			600		565.14		
Margaret Clarke	do	Apr. 16, 1894			600		514.00		
Martha H. Comer	do	Feb. 7, 1898	Mar. 15, 1898		600		41.67		
Elsie E. Daugherty	do	Feb. 1, 1898			600		223.53		
Mattie H. Dickinson	do	do			600		223.53		
Mary A. Egan	do	Oct. 1, 1894			600		580.36		
Mary Evans	do	Nov. 1, 1894			600		247.78	$1.50	
Maggie Fling	do	Feb. 1, 1898	Apr. 6, 1898		600		106.59		
Lillian B. Francis	do	do	May 31, 1898		600		109.67		
Nellie Holland	do	Nov. 8, 1894			600		600.00		
Elizabeth S. Hurst	do	Dec. 7, 1896			600		598.28		
Lizzie Keller	do	Aug. 20, 1897			600		492.21		
Mary Lucid	do	Dec. 16, 1893			600		591.76		
Katherine H. Mara	do	Dec. 10, 1896			600		562.20		
Edna E. Mattox	do	do			600		560.67		
Pearl C. Miles	do	Dec. 7, 1896			600		566.62		
Flora F. Miller	do	Oct. 6, 1896			600		562.47		
Mary E. Ritchie	do	Nov. 26, 1894			600		598.28		
Rachael E. Robinson	do	Feb. 1, 1898			600		223.53		
Sarah A. Shannon	do	do	May 31, 1898		600		195.65		
Daisy Stewart	do	do			600		223.53		
Ella A. Sullivan	do	Dec. 1, 1894			600		582.15		
Eunice D. Tremaine	do	May 1, 1896			600		100.50		
Everesta S. Spink	do	Mar. 7, 1898	June 15, 1898		600		148.56		
Wilhelmina B. Tate	do	Oct. 9, 1896			600		555.58		
Mary Morrison	Laborer			a $30.00			360.00		
T. J. Turner						Office expenses			$18.93
Specialty Manufacturing Co.						Electric desk fans			22.00
Chas. O. Brockway						Export stamps			1.20
Charles E. Snavely						Eight-day clock			5.00
The Grant Manufacturing Co.						Lead disks			5.00

Elba E. Whittaker	do	Jan. 1, 1898			600		260.49		
Anna Zimmerman	do	Feb. 16, 1895			600		566.93		
May M. Sheldon	do	Apr. 25, 1898			600		67.58		
Sylvia M. Whittaker	do	do			600		65.93		
Edna L. Willis	do	do			600		72.53		
Albert E. Behnke						Towels, cleaning office, etc.			$203.48
Chicago Car Seal and Manufacturing Co.						Round tin boxes			2.00
Thomas Manufacturing Co.						Tag fasteners			6.25
The Chicago and Alton R. R. Co.						Transportation, J. R. Mohler		14.60	
MEAT INSPECTION.									
Indianapolis, Ind.									
Thomas J. Turner	Inspector	Jan. 1, 1897			1,400		1,380.77		
T. L. Armstrong	do	May 1, 1897			1,400		1,202.15		
Robt. Darling	Assistant inspector	Dec. 13, 1897			1,200		661.96		
Wm. H. Netherland	do	Jan. 25, 1897	Jan. 3, 1898		1,200		179.36		
Saml. G. Hendren	do	Mar. 4, 1898			1,200		373.33		
Fredk. T. Dolan	do	Apr. 1, 1898			1,200		300.00		
Willis B. Lincoln	do	Apr. 11, 1898			1,200		267.03		
Richd. W. Tuck	do	Apr. 18, 1898			1,200		243.96		
Geo. S. Jones	Clerk	Mar. 10, 1898			840		261.33		
Martin P. Grady	do	June 12, 1894			720		675.91		
Jacob Fox	Stock examiner	Jan. 1, 1894			900		900.00		
W. M. Hicklin	do	Apr. 16, 1894	Mar. 31, 1898		900		602.50		
Geo. W. Koontz	do	Feb. 19, 1894			900		900.00		
Jas. W. Wampler	do	Jan. 1, 1894			900		882.61		
Wm. L. Peggs	do	do			900	}	744.47		
Do	Tagger	Mar. 1, 1898	May 15, 1898		720				
Chas. Bartholomew	do	Nov. 11, 1895			720		696.57		
Patk. Killien	do	Nov. 8, 1894	Mar. 10, 1898		720		486.27		
Matthew Quinn	do	Apr. 16, 1893			720		715.98		
Wm. A. Skinner	do	Nov. 18, 1895			720		712.12		
Jas. L. Gerrish	do	Apr. 11, 1898			720		39.56		
Charles Stark	do	May 2, 1898			720		93.93		
Wm. Woldt	Laborer	Feb. 28, 1898	May 19, 1898	$2.00			140.00		
T. J. Turner						Expressage and ink			8.20
E. J. Brooks & Co.						Lead seals and wires			42.50
Belt R. R. and Stockyard Co.						Rent and heating office			125.25
Chas. O. Brockway						"Condemned" tags			4.20
Thomas Castor						Traveling expenses		22.50	
Central Union Telephone Co.						Telephone			21.29

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
Buffalo, N. Y.									
Thomas Castor	Assistant inspector	Apr. 1, 1897			$1,200		$680.20		
Louis K. Green	do	Oct. 1, 1896			1,300		1,153.84	$62.55	
Wm. A. Rushworth	do	Dec. 15, 1896			1,200		1,128.27		
E. L. Volgenan	do	Dec. 2, 1895			1,200		1,200.00		
John P. O'Leary	do	Feb. 1, 1896			1,200		483.40		
John L. Grobe	Stock examiner	Dec. 2, 1895			900		900.00		
Albert W. Meyer	do	Feb. 15, 1896			900		751.05		
Harrison L. Newton	do	Nov. 8, 1894			900		900.00		
Henry L. Rieman	do	Feb. 15, 1896			900		900.00		
Michl. Chojnacki	Tagger	Apr. 16, 1894			720		718.10		
Michl. Justinger	do	July 1, 1893			720		688.60		
Johanna Greiner	Laborer	May 29, 1896		a $30.00			360.00		
Nelson P. Hinkley						Hire horse and buggy, etc			$182.25
Chas. O. Brockway						Interstate stamps			42.00
MICROSCOPIC INSPECTION.									
Buffalo, N. Y.									
Emma Becker	Assistant microscopist	Aug. 1, 1892			600		554.19		
Mary Ann Clinton	do	July 10, 1893			600		571.90		
Kate Colgan	do	Aug. 6, 1894			600		598.40		
Lillian E. Farrell	do	July 10, 1893			600		460.83		
Mary A. Hanrahan	do	Sept. 11, 1893			600		591.89		
Mary F. Lannon	do	do			600		600.00		
Lizzie Lidle	do	Aug. 1, 1892			600		580.50		
Pearl Masten	do	Dec. 15, 1892			600		552.28		
Anna L. Moran	do	Aug. 1, 1892			600		600.00		
Christina Podolska	do	do	Apr. 27, 1898		600		492.81		
Nellie Nunan	do	July 10, 1893			600		600.00		
Wm. J. Carroll	Tagger	Apr. 16, 1894			720		602.00		
Jas. F. Hughes	Laborer	May 9, 1898			720		400.00		
Frank J. Dunahy	Tagger	May 1, 1893			720		140.00		
Ernest F. Slater, jr	do	Dec. 7, 1896			720		176.08		
Nelson P. Hinkley						Towel supply and expenses			82.18
Dennison Manufacturing Co.						Duplicate tags			18.00

Chas. O. Brockway						Export tags			21.00
The Grant Manufacturing Co.						Lead discs			5.00
MEAT INSPECTION.									
Somerville, Mass.									
Wm. W. Balmer	Inspector	Nov. 20, 1893			1,200		1,200.00		
Edw. P. Dowd	Assistant inspector	Sept. 16, 1895			1,200		703.30		
Jno. V. Laddey	do	Mar. 1, 1898			1,200		400.00		
Alf. F. Martins	do	do			1,200		403.30		
Jno. G. Slee	do	Apr. 14, 1897			1,200		900.00		
H. Q. Thompson	do	Feb. 1, 1898			1,200		496.70		
Wm. H. Way	do	Feb. 23, 1898	June 30, 1898		1,200		82.42		
Wm. P. Cherrington	Stock examiner	Dec. 1, 1894			900		675.00		
Philip J. Fanning	do	Feb. 1, 1896			900		890.25		
Frank N. Brown	Tagger	Jan. 8, 1896			720		540.00		
Henry W. Busteed	do	Feb. 1, 1896			720		514.72		
Frank R. Fravel	do	Oct. 1, 1895			720		720.00		
Wm. J. Corbett	do	Feb. 1, 1896			720		232.19		
Jas. G. Jeffrey	do	Feb. 1, 1898			720		238.70		
Cyrus K. Small	do	Jan. 8, 1896			720		540.00		
Wm. H. Tozier	do	Dec. 21, 1891			720		720.00		
Geo. D. Warner	do	Nov. 18, 1895			720		720.00		
Danl. D. Lee						Stationery, express, and postage stamps.			4.65
Chas. O. Brockway						Interstate meat-inspection stamps.			126.00
Butchers' Slaughtering and Melting Association.						Erecting office for inspector			178.00
MICROSCOPIC INSPECTION.									
Somerville, Mass.									
Charles Bullard	Microscopist	Oct. 1, 1894			1,400		972.18		
Morris Wooden	Assistant inspector	Sept. 16, 1895			1,200		496.63	46.20	
Do	Inspector	Apr. 1, 1898			1,400				
Louis K. Green	Assistant inspector	Oct. 1, 1896			1,200		46.15		
Wm. P. Cherrington	Stock examiner	Dec. 1, 1894			900		225.00		
Frank N. Brown	Tagger	Jan. 8, 1896			720		175.96		
Henry W. Busteed	do	Feb. 1, 1896			720		180.00		
Frank H. Burleigh	do	Sept. 23, 1891			720		698.21		
Kate A. Abbott	Assistant microscopist	Apr. 23, 1894	May 31, 1898		600		525.95		
Eva M. Chickering	do	Nov. 24, 1896			600		528.21		
Gerta M. Colby	do	June 1, 1894			600		548.47		
Luella M. Eaton	do	Feb. 1, 1898			600		241.80		
Gertrude H. Ellison	do	Nov. 24, 1896			600		532.96		

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION—continued.									
Somerville, Mass.—Cont'd.									
Carrie I. Ellsworth	Assistant microscopist	Jan. 5, 1893			$600		$509.90		
Emma H. Ellsworth	do	Feb. 1, 1894			600		575.50		
Anna Erickson	do	July 16, 1893			600		488.06		
Abbie F. Gage	do	Dec. 12, 1892			600		582.02		
Helen M. Cogan	do	Apr. 11, 1898			600		133.47		
Violet A. Hall	do	Nov. 24, 1896			600		562.17		
Nellie F. Kennedy	do	May 14, 1894			600		190.72		
Nellie F. Marks	do	do	Apr. 14, 1898		600		221.74		
Clara La Freniere	do	Nov. 1, 1893			600		573.54		
Mary F Langdon	do	Sept. 28, 1891			600		546.02		
Mabel F. Lowe	do	June 24, 1895			600		540.78		
Mary E. Macloskey	do	May 1, 1894			600		54[illegible].14		
Elizabeth B. Muncey	do	Feb. 1, 1898			600		87.41		
Alice N. Foss	do	Apr. 11, 1898			600		133.47		
Mabel M. Sedgwick	do	Nov. 24, 1896			600		554.11		
Cora L. Seeley	do	Dec. 26, 1892			600		578.60		
Annie C. Shepherd	do	Feb. 1, 1898			600		245.03		
Mima M. Dean	do	Apr. 11, 1898			600		133.47		
Margaret V. Slater	do	Apr. 23, 1894			600		565.32		
Florence I. Turner	do	do			600		529.77		
Ida J. Vance	do	Feb. 1, 1898			600		248.30		
Carlotta L. Ward	do	May 1, 1894			600		503.72		
Grace B. Wheeler	do	May 14, 1894	May 31, 1898		600		502.66		
Etta L. Williams	do	Nov. 1, 1891			600		580.27		
Elis. M. Driscoll	do	Apr. 11, 1898			600		133.47		
Carrie B. Hosler	do	do			600		105.49		
Sarah G. Kelley	do	do			600		133.47		
Eliza M. Taylor	do	do			600		133.47		
Alice M. Watkeys	do	do			600		133.47		
Effie L. Wescott	do	do			600		133.47		
Mary A. Constant	do	May 23, 1898			600		64.34		
A. G. G. Richardson						Bowls, pans, and stationery			$5.00
Bay State Clean Towel Furnishing Co.						Towel supply			84.18

Dennison Manufacturing Co.						Duplicate tags			18.00
Chas. O. Brockway						Export stamps			4.20
Chicago Car Seal and Manufacturing Co.						Round, tin sample boxes			4.00
MEAT INSPECTION.									
Cleveland, Ohio.									
Edw. P. Schaffter	Inspector	Dec. 1, 1897			1,400		817.90	$24.40	2.06
James T. Stuart	do	Sept. 1, 1893			1,400		1,038.66		3.15
Do	Assistant inspector	Mar. 1, 1898			1,200				
John J. Crowley	Tagger	Nov. 6, 1893			720		720.00		
Simon Kacher	do	July 1, 1893			720		720.00		
John D. Shannon	do	Nov. 6, 1893			720		720.00		
Louis N. Stumpf	do	June 16, 1893			720		720.00		
Dennison Manufacturing Co.						Meat-inspection stamps			21.00
E. J. Brooks & Co						Lead seals and wires			42.50
The Wabash R. R. Co						Transportation, J. T. Stuart		21.00	
MICROSCOPIC INSPECTION.									
Cleveland, Ohio.									
Frank Fila	Tagger	Sept. 25, 1893			720		710.00		
Margaret Carroll	Assistant microscopist	Oct. 22, 1894			600		588.35		
Mamie L. Corcoran	do	Dec. 15, 1897			600		299.52		
Alice M. Daugherty	do	Oct. 22, 1894			600		542.76		
Mary English	do	July 1, 1893			600		595.06		
Mary Evans	do	Nov. 1, 1894			600		314.26		
Minnie Forsch	do	July 1, 1893			600		563.56		
Elizabeth C. Gibson	do	July 24, 1896			600		122.24	14.00	
Mary Reinhart	do	Sept. 1, 1893			600		550.94		
Belle Ritter	do	Dec. 1, 1894			600		125.59	14.00	
Isabella Lace	Janitress and box cleaner	May 29, 1896		a $30.00			360.00		
Do	Laborer	Dec. 1, 1897							
James T. Stuart						Expressage and office supplies			2.25
Edw. P. Schaffter						Office supplies			1.45
Dennison Manufacturing Co.						Duplicate tags			9.00
MEAT INSPECTION.									
Cincinnati, Ohio.									
A. G. G. Richardson	Inspector	July 1, 1896			1,400		906.16		.80
Robt. L. Kelly	Assistant inspector	Sept. 7, 1897			1,200		478.26		
Chas. H. Zink	do	June 1, 1896			1,200		387.18	15.00	

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
Cincinnati, Ohio—Cont'd.									
Wm. H. Netherland	Assistant inspector	Jan. 25, 1897	Jan. 3, 1898		$1,200		$35.87	$7.50	
Albert J. Payne	do	June 1, 1895			1,200		19.78	7.65	
A. L. Hirleman	Stock examiner	Mar. 10, 1896			900		895.12		
Robt. A. Broadhurst	Tagger	Jan. 1, 1896			720		720.00		
Edw. C. Carle	do	Oct. 1, 1896			720		298.00		
Patk. E. Quinn	do	Nov. 11, 1895			720		720.00		
Chas. Pearson	do	June 15, 1898			720		31.65		
Chas. O. Brockway						Interstate meat inspection stamps.			$4.20
E. J. Brooks & Co						Lead seals and wires			42.50
MICROSCOPIC INSPECTION.									
Cincinnati, Ohio.									
Carrie Ehlers	Assistant microscopist	Feb. 16, 1898			600		49.50	27.75	
Albert J. Payne						Towel supply and express			1.10
MEAT INSPECTION.									
Lincoln, Nebr.									
W. D. Robbins	Inspector	Jan. 4, 1894			1,200		1,200.00		8.70
John E. Hart	Tagger	Oct. 15, 1897			720		158.28		
Jno. P. Higgins	do	Mar. 1, 1895	July 31, 1897		720		27.39		
John T. Blair	do	Jan. 3, 1898		$2.00			68.00		
Hardy Furniture Co						Office chairs			4.80
Nebraska City.									
W. H. Gibbs	Inspector	Sept. 1, 1893			1,200		1,200.00		2.50
Geo. M. Thomas	Stock examiner	July 1, 1896			900		765.44		
Alfred Day	Tagger	Dec. 10, 1895			720		138.81		
F. A. Dammann	do	June 10, 1895			720		473.38		

Philadelphia, Pa.									
Chas. A. Schaufler	Inspector	Sept. 1, 1893			1,600		1,600.00		50.32
Jas. Johnston	Assistant inspector	Nov. 18, 1895			1,200		1,200.00		
Wm. R. Reynolds	Stock examiner	Dec. 2, 1895	Sept. 30, 1897		900		173.64		
Geo. B. Wright	do	Jan. 1, 1897			900		882.84		
Jas. P. Shannon	Clerk	Dec. 9, 1897	Dec. 22, 1897		1,000		40.76	2.50	
Chas. J. Bigley	do	Jan. 15, 1898			840		378.08		
Jno. C. Collahan	Tagger	Oct. 1, 1895			720		706.20		13.09
Lewis Dorn	do	June 16, 1893	May 31, 1898		720		650.76		
A. N. Pepperman	do	Jan. 23, 1896			720		720.00		
Thomas Reid	do	June 1, 1893			720		720.00		
Matt. Robinson	do	May 1, 1897			720		718.00		6.42
Wm. T. Tippett	do	Dec. 2, 1895			720		698.54		
Howard W. Thomas	do	May 7, 1897			720		59.30		
The Bell Telephone Co. of Philadelphia.						Telephone rental			137.33
Baltimore and Ohio R. R. Co.						Transfer J. P. Shannon		8.00	
Jersey City, N. J.									
Julius Huelsen	Veterinary inspector	Mar. 10, 1888			1,400		1,400.00		38.65
Nathan K. Fegley	Assistant inspector	June 8, 1896			1,200		1,200.00		
Geo. B. Rose	Stock examiner	Jan. 1, 1894			1,000		1,000.00		
Immanuel Due	Clerk	Mar. 2, 1896			900		892.63		
Geo. J. Hoerner	Tagger	May 1, 1896			720		720.00		
Jno. McCullough, jr.	do	Jan. 8, 1896			720		720.00		
Jno. Purcell, jr.	do	Sept. 1, 1893			720		720.00		
Thomas Shea	do	July 17, 1893			720		720.00		
E. J. Brooks & Co						Lead seals and wires			42.50
R. H. Weaver						Awnings and work			4.00
New York, New Haven and Hartford R. R. Co.						Freight on tags			.82
Portland, Oreg.									
E. N. Hutchinson	Assistant inspector	Aug. 15, 1896			1,200		1,200.00		
John Brown	Stock examiner	Mar. 2, 1896			900		480.40		
Howard D. Ebey	Tagger	Feb. 15, 1896			720		678.18		
Wm. H. Gately	do	Mar. 1, 1898			720		192.37		
Melcher M. Hunter	Laborer	Dec. 8, 1897		2.00			148.00		
South Omaha, Nebr.									
Don C. Ayer	Inspector	Nov. 1, 1896			1,600		1,595.67		28.10
J. E. Blackwell	do	Aug. 1, 1893			1,400		1,065.38		
E. W. Schirmer	do	do	May 31, 1898		1,400		1,061.58		
A. T. Everett	do	Nov. 6, 1893			1,200		1,196.73		
Saml. E. Cosford	Assistant inspector	Dec. 10, 1895			1,200		1,175.90		
Willard A. Savage	do	Apr. 1, 1898			1,200		300.00		
Dean G. Cooper	do	Mar. 4, 1898			1,200		380.14		
Chas. Conoyer	Clerk	Jan. 16, 1897			1,000		1,000.00		

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
South Omaha, Nebr.—Continued.									
Phelps Paine	Clerk	June 1, 1897			$900		$860.53		
Jay E. Williams	do	Mar. 10, 1898			840		249.63		
Chas. S. Dickey	do	do	May 22, 1898		840		171.30		
D. J. Campbell	Stock examiner	June 1, 1893	Feb. 12, 1898		900		75.80		
J. W. Davis	do	Jan. 1, 1894			900		900.00		
Geo. H. Guy	do	do	Nov. 30, 1897		900		75.80		
W. K. Jacobs	do	June 27, 1895			900		890.14		
Frank Jelen	do	Apr. 1, 1895			900		897.57		
George Karll	do	June 26, 1895			900		848.03		
Thos. J. Lowrey	do	Mar. 25, 1895			900		900.00		
Jay Merrill	do	Jan. 1, 1894			900		900.00		
Frank G. Patrick	do	do			900		900.00		
Jacob I. Payne	do	do			900		895.03		
T. J. Alexander	Tagger	Aug. 1, 1897			720		649.67		
Jacob Burkard	do	May 16, 1893			720		720.00		
Joseph Butler	do	Feb. 16, 1895	Sept. 30, 1897		720		105.66		
Patk. Butler	do	May 16, 1893	Nov. 6, 1897		720		11.74		
Dee N. Chase	do	June 27, 1895			720		706.10		
James Condon	do	Aug. 4, 1897			720		645.66		
W. W. Crandall	do	June 1, 1897			720		716.10		
Reuben Forbes	do	Aug. 1, 1897			720		655.54		
Elias Gilmore	do	Feb. 16, 1898			720		278.00		
John E. Hart	do	Oct. 15, 1897			720		350.44		
Anton Kostal	do	May 16, 1893			720		718.10		
James Kunes	do	do			720		224.76		
Russell G. Merrill	do	June 10, 1898			720		41.54		
Thomas Leddy	do	Feb. 15, 1895			720		706.26		
R. M. Mahana	do	June 1, 1893			720		720.00		
John McCann	do	June 27, 1895			720		717.94		
Jas. D Murphy	do	June 1, 1895	Feb. 12, 1898		720		60.60		
Chas. H. McCormick	do	June 6, 1898			720		43.52		
Jno. B. Payton	do	July 16, 1897			720		690.70		
Stephen Roberts	do	Aug. 16, 1897			720		630.10		
Jas. T. Robertson	do	Nov. 1, 1897			720		461.55		
L. Schilbsby	do	Nov. 6, 1893			720		712.00		
Harry A. Shatzell	do	Aug. 4, 1897			720		651.68		

Peter W. Sherlock	do	Mar. 25, 1895	Feb. 12, 1898		720		60.60		
Wm. H. Saunders	do	Apr. 11, 1898			720		152.35		
Philip Smith	do	May 22, 1893			720		708.06		
Saml. I. Valentine	do	Oct. 16, 1894			720		715.98		
Chris. M. Raff	do	Mar. 9, 1898			720		226.00		
Henry C. Williams	do	Apr. 1, 1898			720		180.00		
John T. Blair	do	Jan. 3, 1898		$2.00			216.70		
J. O. Eastman	Laborer	July 1, 1897		2.00			474.00		
Geo. S. Hickox	do	Nov. 9, 1897		2.00			400.00		$3.00
D. R. Way	do	June 21, 1897		2.00			128.00	$4.12	
Packers' National Bank						Office rent			308.23
Evans' Laundry Co						Towel supply			11.50
Nebraska Telephone Co						Telephone rental			51.50
Omaha Printing Co						Giant bath and wringer			6.00
Chas. O. Brockway						Interstate meat inspection stamps.			210.00
Wm. E. Pratt						Hog rings and ringers			4.15
Luis Berger						Hauling seals and tags			11.90
Carter Hardware Co						Padlocks			3.50
E. J. Brooks & Co						Lead seals and wires			850.00
American Express Co						Hauling sealing presses			2.25
N. L. Woodward						Water cooler			3.00
M. Donovan						Sign for office			5.00
The Chicago, Burlington and Quincy R. R. Co.						Transportation, D. R. Way		2.93	
Bloomington, Ill.									
Fredk. Braginton	Inspector	May 16, 1893			1,400		319.22	6.80	8.50
Chas. Vandervoort	Tagger	do			720		144.44	6.50	
MICROSCOPIC INSPECTION.									
South Omaha, Nebr.									
Lowell Clarke	Assistant inspector	Nov. 1, 1895			1,200		1,147.32		
Sarah H. Y. Barber	Assistant microscopist	Aug. 20, 1897			600		492.20		
Maud B. Beck	do	Feb. 10, 1898			600		208.60		
Mary G. Bothwell	do	Dec. 20, 1897			600		293.10		
Louise Brereton	do	Sept. 1, 1897			600		497.40		
Daisy M. Bryant	do	Dec. 20, 1897			600		260.27		
Ida E. Bushnell	do	May 16, 1893			600		545.97		
Nellie M. Dennis	do	Jan. 5, 1895			600		563.74		
Carrie Ehlers	do	Feb. 16, 1898			600		173.87		
Maggie Fahey	do	Jan. 5, 1895	Apr. 30, 1898		600		468.37		
Mary K. Giblin	do	June 16, 1893			600		549.13		
Lulu E. Gibson	do	Sept. 1, 1896			600		513.84		
Margaret Hogan	do	June 16, 1893			600		534.47		
Stella Huestis	do	Dec. 20, 1897			600		294.80		
Etta Kassal	do	June 16, 1893			600		568.70		
Mary E. Kilbourne	do	Aug. 20, 1897			600		513.59		
Mary Madden	do	do	Dec. 19, 1897		600		195.74		
Gertrude McCulloh	do	do			600		470.79		

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION—continued.									
South Omaha, Nebr.—Continued.									
Mary H. Milton	Assistant microscopist	Feb. 10, 1898			$600		$206.90		
Mary E. Price	do	Sept. 1, 1897			600		474.23		
Fannie Sage	do	Aug. 20, 1897			600		492.21		
Jessie R. Savage	do	Sept. 1, 1897	Dec. 30, 1897		600		194.06		
Cora A. Sayre	do	Jan. 5, 1895			600		578.76		
Lizzie Spencer	do	Aug. 20, 1897			600		492.08		
Janet Stevenson	do	Feb. 10, 1898			600		202.08		
Etta Thompson	do	May 22, 1893			600		515.99		
Helen S. Wainright	do	Sept. 1, 1897			600		459.20		
Louisa E. Wilson	do	Aug. 17, 1897			600		444.41		
Mary E. Williams	do	Oct. 25, 1897			600		150.91		
Mollie A. Conoyer	do	June 1, 1898			600		24.73		
E. M. Fansher	do				600		24.73		
Nannie L. Vaughan	Janitress and box cleaner Laborer	May 29, 1896 Dec. 1, 1897		a $25.00			272.58		
Ophelia Smith	do	Mar. 3, 1898	Mar. 31, 1898	a 25.00			23.39		
Den C. Ayer						Gasoline, ice, postage, express			$34.20
Packers' National Bank						Office rent			300.00
Evans' Laundry Co						Towel supply			70.75
Chas. O. Brockway						Export stamps			.84
Luis Berger						Hauling chairs and tags			2.65
Thomas Manufacturing Co						Tag fasteners			6.25
F. B. Featner						Record book			6.00
Freeman Bros						Gasoline and matches			2.10
Geo. W. Briggs						Gasoline stove and bucket			2.85
South Omaha Ice Co						Ice			2.15
MEAT INSPECTION.									
East St. Louis, Ill.									
J. J. Brougham	Inspector	July 1, 1896			1,600		1,600.00		11.85
Boyd Baldwin	Assistant inspector	June 21, 1897			1,200		1,170.45		
Louis P. Cook	do	May 1, 1896			1,200		795.00		
Elwin T. Davison	do	Sept. 7, 1896			1,200		1,193.40		

Frank L. DeWolf	do	Sept. 16, 1895			1,200		1,079.97	$40.05	
Geo. Ditewig	do	Aug. 11, 1896			1,200		430.45		
Fredk. W. Hopkins	do	Feb. 15, 1896			1,200		466.63	12.80	
Robt. L. Kelly	do	Sept. 7, 1897			1,200		496.70		
John P. Turner	do	June 7, 1898			1,200		52.75		
A. R. Bruton	Stock examiner	Feb. 15, 1895			900		900.00		
Wm. T. Flynn	do	Jan. 1, 1894			900		858.41		
David R. Hodges	do	Sept. 1, 1896			900		900.00		
Geo. Sutherland	do	Nov. 12, 1894			900		900.00		
Geo. H. Woolfolk	do	Mar. 2, 1896			900		887.79		
Jno. F. Schiermann	do	Apr. 1, 1897			900		74.13		
Wm. S. Crawford	Clerk	Apr. 10, 1895			900		900.00		
Clement Bevelot	Tagger	Dec. 1, 1893			720		676.00		
Joseph G. Carr	do	Feb. 15, 1895			720		716.10		
Wm. J. Doyle	do	do			720		720.00		
Robt. Gray	do	June 24, 1895			720		720.00		
Geo. Markert	do	Jan. 2, 1894			720		720.00		
Frank O'Neill	do	May 1, 1896			720		720.00		
Jos. Sullivan	do	Feb. 15, 1895			720		388.00		
Edwd. O. Speake	do	Apr. 1, 1898			720		178.06		
Geo. F. Harley	do	June 18, 1898			720		19.78		
E. S. Bennett	do	Feb. 15, 1895			720		496.00		
St. Louis Natl. Stock Yards						Office rent			334.00
E. J. Brooks & Co						Lead seals and wires			425.00
Chas. O. Brockway						Interstate meat-inspection stamps.			21.00
Clinton, Iowa.									
Arthur B. Morse	Inspector	May 19, 1895			1,400		700.00	15.35	3.35
Chicago and Northwestern Rwy. Co.						Transportation, A. B. Morse		6.75	
Chicago Great Western Rwy. Co.						do		6.65	
MICROSCOPIC INSPECTION.									
East St. Louis, Ill.									
Frank L. DeWolf	Assistant inspector	Sept. 16, 1895			1,200		73.33		
E. S. Bennett	Tagger	Feb. 15, 1895			720		224.00		
David C. Barnett	do	Mar. 25, 1898			720		192.00		
Clement Bevelot	do	Dec. 1, 1893			720		44.00		
Ada H. Baker	Assistant microscopist	Mar. 10, 1898			600		184.97		
Nellie M. Bell	do	do	June 9, 1898		600		148.67		
Mary Connolly	do	June 10, 1898			600		34.62		
Joanna T. Green	do	Mar. 10, 1898	June 9, 1898		600		152.01		
Pearl M. Finch	do	June 10, 1898			600		34.62		
Sallie R. Griffin	do	Sept. 1, 1893			600		186.67	5.35	
Anna Klingel	do	Mar. 10, 1898			600		186.67		
Cora A. Houseman	do	June 10, 1898			600		32.97		

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898 -Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION—continued.									
East St. Louis, Ill.—Cont'd.									
Louise M. Lorey	Assistant microscopist	Mar. 10, 1898			$600		$183.33		
Ruby L. Newkirk	do	do	June 9, 1898		600		152.01		
Mamie Pauly	do	do			600		186.67		
L. S. Ropiequet	do	do			600		184.97		
Martha Schnell	do	June 10, 1898			600		34.62		
Reika Underfanger	do	Mar. 10, 1898	June 9, 1898		600		152.01		
Henrietta M. Vest	do	do			600		173.51		
Mamie Wood	do	do	June 9, 1898		600		152.01		
Orville H. Banks	Laborer	Mar. 26, 1898		a$30.00			93.87		
J. J. Brougham						Towels, ice, freight, and stationery.			$35.37
St. Louis Natl. Stock Yards						Office rent			200.00
Scarritt-Comstock Furniture Co.						Desks, chairs, and tables			60.50
R. B. Gray China Co.						"Success" filters			13 50
The Chicago and Alton R. R. Co.						Transportation, S. R. Griffins		$7.25	
heo. Wiegreffe & Son						Screen doors and windows			15.00
MEAT INSPECTION.									
Hammond, Ind.									
Lewis R. Baker	Veterinary inspector	Sept. 1, 1893			1,400		1,400.00		4.30
Fredk. Braginton	Inspector	May 16, 1893			1,400		1,080.77		
Henry J. Hancock	Assistant inspector	Apr. 8, 1898			1,200		276.92		
P. J. Golden	Stock examiner	Apr. 1, 1896			900		900.00		
J. J. Molloy	do	June 27, 1895			900		900.00		
Jno. J. Young	do	Dec. 1, 1893			900		900.00		
Thos. Hansen	Tagger	May 16, 1893			720		720.00		
F. P. Herron	do	June 27, 1895			720		720.00		
Jacob Leismann	do	May 16, 1893			720		720.00		
John Summers	do	do			720		720.00		
W. H. Timmons	do	do			720		720.00		
Chas. Vandervoort	do	do			720		575.60		

Frank L. DeWolf	do	Sept. 16, 1895			1,200		1,079.97	$40.05	
Geo. Ditewig	do	Aug. 11, 1896			1,200		430.45		
Fredk. W. Hopkins	do	Feb. 15, 1896			1,200		466.63	12.80	
Robt. L. Kelly	do	Sept. 7, 1897			1,200		496.70		
John P. Turner	do	June 7, 1898			1,200		52.75		
A. R. Bruton	Stock examiner	Feb. 15, 1895			900		900.00		
Wm. T. Flynn	do	Jan. 1, 1894			900		858.41		
David R. Hodges	do	Sept. 1, 1896			900		900.00		
Geo. Sutherland	do	Nov. 12, 1894			900		900.00		
Geo. H. Woolfolk	do	Mar. 2, 1896			900		887.79		
Jno. F. Schiermann	do	Apr. 1, 1897			900		74.13		
Wm. S. Crawford	Clerk	Apr. 10, 1895			900		900.00		
Clement Bevelot	Tagger	Dec. 1, 1893			720		676.00		
Joseph G. Carr	do	Feb. 15, 1895			720		716.10		
Wm. J. Doyle	do	do			720		720.00		
Robt. Gray	do	June 24, 1895			720		720.00		
Geo. Markert	do	Jan. 2, 1894			720		720.00		
Frank O'Neill	do	May 1, 1896			720		720.00		
Jos. Sullivan	do	Feb. 15, 1895			720		388.00		
Edwd. O. Speake	do	Apr. 1, 1898			720		178.06		
Geo. F. Harley	do	June 18, 1898			720		19.78		
E. S. Bennett	do	Feb. 15, 1895			720		496.00		
St. Louis Natl. Stock Yards						Office rent			334.00
E. J. Brooks & Co						Lead seals and wires			425.00
Chas. O. Brockway						Interstate meat-inspection stamps.			21.00
Clinton, Iowa.									
Arthur B. Morse	Inspector	May 19, 1895			1,400		700.00	15.35	3.35
Chicago and Northwestern Rwy. Co.						Transportation, A. B. Morse		6.75	
Chicago Great Western Rwy. Co.						do		6.65	
MICROSCOPIC INSPECTION.									
East St. Louis, Ill.									
Frank L. DeWolf	Assistant inspector	Sept. 16, 1895			1,200		73.33		
E. S. Bennett	Tagger	Feb. 15, 1895			720		224.00		
David C. Barnett	do	Mar. 25, 1898			720		192.00		
Clement Bevelot	do	Dec. 1, 1893			720		44.00		
Ada H. Baker	Assistant microscopist	Mar. 10, 1898			600		184.97		
Nellie M. Bell	do	do	June 9, 1898		600		148.67		
Mary Connolly	do	June 10, 1898			600		34.62		
Joanna T. Green	do	Mar. 10, 1898	June 9, 1898		600		152.01		
Pearl M. Finch	do	June 10, 1898			600		34.62		
Sallie R. Griffin	do	Sept. 1, 1893			600		186.67	5.35	
Anna Klingel	do	Mar. 10, 1898			600		186.67		
Cora A. Houseman	do	June 10, 1898			600		32.97		

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION.									
Sioux City, Iowa.									
Ulysses G. Houck	Assistant inspector	Sept. 15, 1896			$1,200		$476.63	$8.40	
Mary A. Atwood	Assistant microscopist	Feb. 7, 1898			600		200.34		
Eulalia Edwards	do	Sept. 1, 1897			600		203.71		
Mary Madden	do	Aug. 20, 1897	May 6, 1898		600		144.39		
Anna R. Strange	do	Feb. 7, 1898			600		202.04		
H. Inez Temple	do	do			600		202.04		
Gertrude Wells	do	do	May 6, 1898		600		146.09		
Mary E. Williams	do	Oct. 25, 1897			600		200.37		
Mary L. Pendleton	do	May 9, 1898			600		52.75		
Alice E. Spalding	do	do			600		52.75		
Amelia M. Allyn	do	May 16, 1898			600		39.57		
Clara E. Townsend	do	do			600		41.21		
Eugenie Ulrich	do	do			600		41.21		
Wm. Thompson						Towels, ice, stationery			$72.08
Wm. Hill						Janitor work			3.75
Martin P. Berg						Tables			12.50
Pelletier Dry Goods Co						Window shades, tubs, etc			17.09
E. A. Conway Coal Co						Coal and kindling			26.63
Frank T. Houx						Repairing wall and ceilings			15.00
Almskog & Anderson						Papering and calciminiug			10.00
Beach & Weld						Stove, hod, and shovels			28.20
Erickson Hardware Co						Stove, water tank, and nails			29.65
Lindholm Furniture Co						Oak desk, flat top			11.00
Chicago, Milwaukee and St. Paul Rwy. Co.						Transportation, U. G. Houck		12.75	
Ochsner & Orcutt Co						Oil stove, water cooler			9.40
Cedar Rapids, Iowa.									
Trajan A. Shipley	Inspector	July 1, 1896			1,400		1,400.00		3.55
John McBirney	do	June 15, 1897			1,400		280.75	12.80	
Wm. F. Pfaeging	Stock examiner	Aug. 1, 1894			900		897.57		
Geo. H. Bucklin	Tagger	June 24, 1895	Apr. 2, 1898		720		538.00		
F. A. Dammann	do	June 10, 1895			720		226.96		
Alfred Day	do	Dec. 10, 1895			720		493.10		
Chas. L. Grumbine	Laborer	Apr. 12, 1898		$2.00			134.00		

Chas. O. Brockway						Interstate meat-inspection stamps.			42.00
Dennison Manufacturing Co.						Meat-inspection tags			6.30
E. J. Brooks & Co						Lead seals and wires			17.00
MICROSCOPIC INSPECTION.									
Cedar Rapids, Iowa.									
Walter J. Stewart	Assistant inspector	June 15, 1896			1,200		360.00	6.87	
Mary E. Adams	Assistant microscopist	Feb. 16, 1898			600		208.49		
Edith A. Bailey	do	do			600		196.90		
Ursula P. Bryant	do	do			600		213.34		
M. Ruby Douglas	do	do	May 15, 1898		600		142.56		
Abbie E. Johnson	do	do	do		600		142.56		
Pearl E. Listebarger	do	do	do		600		142.56		
M. Ellen Lucore	do	do	do		600		140.90		
Leah Maynard	do	do	do		600		140.86		
Mabel Sprague	do	do	do		600		127.68		
Edith L. Wolf	do	do			600		203.45		
Martha A. Brittan	do	do			600		74.17		
Tresey Cowan	do	do			600		74.17		
Carolyn M. Hopkins	do	do			600		62.64		
Isabel D. Knox	do	do			600		46.15		
Goldie B. Spafard	do	do			600		72.52		
May M. Hartley	do	do			600		36.26		
D. N. Wheeler	Laborer	Mar. 10, 1898		2.00			192.00		
T. A. Shipley						Towels, janitor, stationery			66.87
F. Macfarlane						Mirror and tables			15.75
Jones & Luberger						Chairs			12.00
MEAT INSPECTION.									
Ottumwa, Iowa.									
Joshua Miller	Assistant inspector	Dec. 10, 1895			1,200		1,200.00		15.05
Abraham Mader	Stock examiner	Jan. 1, 1894			900		890.00		
Llewellyn C. Akin	Tagger	Feb. 1, 1898			720		284.00		
Geo. S. Bliss	do	May 18, 1898			720		85.05		
E. J. Brooks & Co						Lead seals and wires			8.50
MICROSCOPIC INSPECTION.									
Ottumwa, Iowa.									
Walter J. Stewart	Assistant inspector	June 15, 1896			1,200		16.67	14.98	
Fannie Cone	Assistant microscopist	Mar. 9, 1898			600		155.42		
Emma J. Dawson	do	Apr. 1, 1898	June 30, 1898		600		112.10		
Alice A. Emery	do	Mar. 9, 1898	June 8, 1898		600		119.09		
Maude D. Holman	do	do			600		133.93		
Bertha S. Hunter	do	do			600		138.76		

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation. Per diem.	Compensation. Per annum.	Disbursements. Miscellaneous items.	Disbursements. Salaries.	Disbursements. Traveling.	Disbursements. Miscellaneous.
MICROSCOPIC INSPECTION—continued.									
Ottumwa, Iowa—Cont'd.									
Clara Sargent	Assistant microscopist	Mar. 9, 1898	June 8, 1898		$600		$122.45		
Addie D. Smith	do	do	do		600		119.09		
Vinnie White	do	do			600		133.94		
Harriet E. Barnes	do	June 9, 1898			600		32.97		
Margaret E. Stevens	do	do			600		32.97		
Beulah MacFarland	do	do			600		29.67		
Winifred MacFarland	do	do			600		29.67		
U. R. Walton	Laborer	Mar. 28, 1898		a $30.00			93.87		
Joshua Miller						Towels, janitor, express, and freight.			$11.75
MEAT INSPECTION.									
Pittsburg, Pa.									
Fredk. W. Ainsworth	Assistant inspector	Feb. 7, 1898			1,200		463.30		
Wm. H. Kearfott	Stock examiner	Oct. 1, 1895	Feb. 28, 1898		900		459.98		
Geo. B. Martin	Tagger	Mar. 1, 1895	Apr. 15, 1898		720		488.00		
Jas. L. McGill	do	Jan. 17, 1898			720		328.00		
Frank J. Gilmore	do	Feb. 1, 1896			720		3.91		
Jas. F. Hughes	Laborer	May 9, 1898			720		102.82		
Jno. T. Callahan	do	Sept. 3, 1897		2.00			235.00		
Louis R. Cobick	do	Dec. 3, 1897		2.00			49.00		
Harry N. Waller						Freight and office expenses			1.60
E. J. Brooks & Co						Lead seals and wires			34.00
Marshalltown, Iowa.									
Ira K. Atherton	Assistant inspector	Feb. 15, 1895			1,200		1,200.00		1.85
Alfred J. Smith	Tagger	Apr. 15, 1898			720		150.37		
David C. Wilbur						Flat-top desk			8.50
MICROSCOPIC INSPECTION.									
Marshalltown, Iowa.									
Arthur R. Wake	Assistant inspector	Nov. 18, 1895			1,200		253.85	$14.80	
Mary E. Chickering	Assistant microscopist	Apr. 18, 1898			600		88.92		

Ines J. Christie	do	do			600		88.92		
Clara E. Holmes	do	do			600		88.92		
Mae S. Wall	do	do			600		79.12		
Maud St. John	do	do			600		19.78		
Ira K. Atherton						Towels, express, cups, and glasses.			15.39
David C. Wilbur						Desk, table, and chairs			16.15
Louis Hax Furniture Co						Tables			13.50
MEAT INSPECTION.									
Davenport, Iowa.									
Chas. M. Day	Assistant inspector	Nov. 19, 1894			1,200		436.97		
Geo. Ditewig	do	Aug. 11, 1896			1,200		759.69	4.15	.65
John Trainer	Stock examiner	June 27, 1895			900		900.00		
Geo. C. Burke	do	Jan. 1, 1894			900		900.00		
Chicago, Burlington and Quincy R. R. Co.						Transportation Geo. Ditewig		7.36	
San Francisco, Cal.									
Geo. S. Baker	Inspector	Nov. 1, 1896			1,600		1,600.00	202.15	24.90
John J. Borden	Stock examiner	Mar. 2, 1896			900		900.00		
John Brown	do	do			900		117.18		
Ambrose McSweeney	do	Feb. 15, 1896			900		872.96		
Daniel McSweeney	do	Nov. 18, 1895	Mar. 31, 1898		900		179.30		
John E. Munn	do	Jan. 1, 1897			900		900.00		
John F. Nelson	do	Feb. 15, 1896			900		882.86		
James A. Riley	do	Nov. 10, 1896			900		852.50		
Laomer West	Clerk	June 1, 1896			900		900.00		
Thos. N. Badger	Tagger	Sept. 1, 1896	Dec. 31, 1897		720		176.14		
Frank Brown	do	Dec. 7, 1896	Mar. 1, 1898		720		449.94		
Thos. F. Brown	do	Oct. 12, 1896			720		153.23		
Harry S. Newlove	do	Jan. 1, 1897			720		322.82		
Jno. H. Webster	do	Mar. 2, 1896			720		720.00		
Edw. E. Stephens	do	Dec. 9, 1896			720		180.00		
B. P. Oliver						Office rent			240.00
Pacific Telephone and Telegraph Co.						Telephone rental			120.00
Los Angeles, Cal.									
Orlando B. Hess	Inspector	July 1, 1896			1,400		1,400.00		2.20
Wm. R. Dennis	Stock examiner	Nov. 10, 1896			900		900.00		
A. J. O'Rourke	do	do			900		900.00		
Thos. N. Badger	Tagger	Sept. 1, 1896	Dec. 31, 1897		720		180.00		
M. J. P. Nolte	do	July 1, 1896			720		720.00		
Edw. E. Stephens	do	Dec. 9, 1896			720		534.18		
Orlando B. Hess						Hire, horse and buggy			360.00

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
South St. Joseph, Mo.									
John Forbes	Inspector	Sept. 16, 1894			$1,400		$1,400.00		$20.68
J. E. Blackwell		Aug. 1, 1893			1,400		326.91	$6.70	
Jas. S. Kelly	Assistant inspector	Apr. 1, 1897			1,200		1,200.00		
James Wilson	do	Dec. 1, 1894			1,200		1,196.70		
Howard M. Burgess	do	Apr. 8, 1898			1,200		276.92		
Jno. B. Wright	do	Apr. 18, 1898			1,200		243.96		
Wm. W. Johnston	do	May 23, 1898			1,200		108.79		
H. J. Washburn	do	do			1,200		125.27		
Wm. E. Mowrer	Clerk	Apr. 15, 1898			840		177.72		
Frank A. Ewing	Stock examiner	May 1, 1894			900		897.52		
Jas. F. Atherton	Tagger	Mar. 25, 1898			720		194.00		
Wm. J. Hardenstine	do	May 1, 1896			720		214.00	2.90	
Emory K. Hess	do	Dec. 10, 1895			720		720.00		
Clayton E. Moss	do	May 1, 1896			720		420.60	2.25	
Jas. P. Ray	do	Nov. 12, 1894			720		692.28		
Jno. S. Biggs	do	Apr. 15, 1898			720		152.35		
W. D. Benton	do	do			720		148.43		
T. Byron Cracroft	do	do			720		128.53		
Moses W. Games	do	do			720		96.92		
Thos. Redmond	do	Apr. 25, 1898			720		132.57		
Wm. Yenner	do	May 20, 1898			720		83.04		
Henry Singleton	do	May 23, 1898			720		77.10		
Nelson Enis	Laborer	May 12, 1898	June 15, 1898	$2.00			60.00		
John Forbes						Hire, horse and buggy			180.00
St. Joseph Stock Yards Co.						Office rent			150.00
Weigel & Sons Furniture Co.						Desk, chair, and table			33.25
Kansas City, St. Joseph and Council Bluffs R. R. Co.						Transportation C. E. Moss		1.90	
MICROSCOPIC INSPECTION.									
South St. Joseph, Mo.									
Wm. A. Heck	Assistant inspector	Apr. 15, 1897			1,200		360.00	3.15	
Mary K. A. Aulser	Assistant microscopist	Mar. 15, 1898	June 14, 1898		600		138.76		

Holly Burgess	do	do	June 30, 1898		600		161.85		
Mary B. Carter	do	do			600		165.20		
Eunice E. Flynn	do	June 15, 1898			600		26.37		
Helen Frodsham	do	Mar. 15, 1898	June 14, 1898		600		140.46		
Minnie Harrington	do	do	do		600		142.11		
Hulda Hornkohl	do	do	do		600		140.46		
Lillie M. Horn	do	do			600		166.79		
Anna M. Jewett	do	June 15, 1898			600		26.37		
Katherine McGillis	do	Mar. 15, 1898			600		150.16		
Hortense Pugh	do	do			600		166.84		
Grace Puette	do	June 15, 1898			600		26.37		
Jennie C. Radford	do	Mar. 15, 1898	June 14, 1898		600		128.88		
Ellen Rogers	do	do	do		600		142.11		
Mary Rhodes	do	do	do		600		133.82		
Idabel Thorp	do	do	do		600		137.12		
Nellie Walker	do	June 15, 1898			600		26.37		
M. N. Bivin	Laborer	Mar. 23, 1898		a 30.00			98.71		
John Forbes						Express, soda, and turpentine			9.95
The Louis Hax Furniture Co.						Chairs, desks, and tables			86.45
W. F. Kirkpatrick & Co						Eight-day clock			5.00
Electric Towel Supply Co						Towel supply			17.50
Combe Printing Co						Record books			10.00
J. Wickenhoefer						Leather cloth			5.40
MEAT INSPECTION.									
Miscellaneous.									
E. Morrison Paper Co						Rubber bands			32.00
John C. Parker						Blank books, files, and ink			78.37
Rudolph, West & Co						Nail puller and wire cutter			7.07
The J. F. W. Dorman Co						Ink pads and rubber figures			76.94
Chadwick Copying Book Co						Copying books			107.04
Chas. O. Brockway						Interstate stamps and "condemned" tags.			4,839.24
Easton & Rupp						Typewriter oil			.96
R. Carter Ballantyne						McGill fasteners			5.48
J. Ottmann Lithographing Co.						Bound certificates of inspection.			1,145.63
Dennison Manufacturing Co.						Meat-inspection tags			2,375.10
H. F. Miller & Son						1 gallon, and round cans			29.00
Austin Smith						Blotting paper			14.64
C. S. Braisted						Pencils, pens, and penholders			40.20
J. C. Ergood & Co						Soap (I. & B.)			18.07
D. H. Burrell & Co						Poplar boxes			28.82
Edw. F. Ebinger						Drayage			3.51
Jas. S. Topham						100 leather belts			25.00

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MEAT INSPECTION—cont'd.									
Miscellaneous—Continued.									
Thomas Manufacturing Co.						"Condemned" tags			$103.50
Caton Manufacturing Co.						Pad ink			4.20
E. J. Brooks & Co						Seals and wires, and felt pads			1,820.04
Geo. W. Knox Express Co.						Drayage			.48
Fredk. Springmann						do			12.00
James B. Lambie						1 box chisel			.40
The Public Printer						200 copies Bulletin, No. 19			33.94
Old Colony Steamboat Co.						Freight on tags			1.72
Vandalia Line						do			168.95
Star Union Line						Freight on tags and seals			37.54
Kansas and St. Joseph R. R. Co.						Freight on tags and ink			63.59
Burlington and Missouri River R. R. in Nebraska.						Freight on stamps			28.72
Wabash R. R. Co						Freight on seals and presses			76.00
Oregon R. R. and Navigation Co.						Freight on seals and tags			1.26
Missouri Pacific Rwy Co.						Freight on stamping ink			1.22
Chicago, Indianapolis and Louisville Rwy. Co.						Freight on stamps			3.79
Baltimore and Ohio R. R. Co.						Freight on tags and ink			2.06
Pennsylvania R. R. Co						Freight on tags, seals, and presses.			12.22
Chicago and Alton R. R.						do			5.04
Cleveland, Cincinnati, Chicago and St. Louis Rwy Co.						Freight on seals and stamps			3.61
New York, Chicago and St. Louis Rwy. Co.						Freight on stamps			1.78
Chicago and Northwestern Rwy. Co.						Freight on stamps, tags, and ink.			65.99
Erie R. R. Co						Freight on seals and presses			2.59

Holly Burgess	do	do	June 30, 1898		600		161.85		
Mary B. Carter	do	do			600		165.20		
Eunice E. Flynn	do	June 15, 1898			600		26.37		
Helen Frodsham	do	Mar. 15, 1898	June 14, 1898		600		140.46		
Minnie Harrington	do	do	do		600		142.11		
Hulda Hornkohl	do	do	do		600		140.46		
Lillie M. Horn	do	do			600		166.79		
Anna M. Jewett	do	June 15, 1898			600		26.37		
Katherine McGillis	do	Mar. 15, 1898			600		150.16		
Hortense Pugh	do	do			600		166.84		
Grace Puette	do	June 15, 1898			600		26.37		
Jennie C. Radford	do	Mar. 15, 1898	June 14, 1898		600		128.88		
Ellen Rogers	do	do	do		600		142.11		
Mary Rhodes	do	do	do		600		133.82		
Idabel Thorp	do	do	do		600		137.12		
Nellie Walker	do	June 15, 1898			600		26.37		
M. N. Bivin	Laborer	Mar. 23, 1898		a 30.00			98.71		
John Forbes						Express, soda, and turpentine			9.95
The Louis Hax Furniture Co.						Chairs, desks, and tables			86.45
W. F. Kirkpatrick & Co						Eight-day clock			5.00
Electric Towel Supply Co						Towel supply			17.50
Combe Printing Co						Record books			10.00
J. Wickenhoefer						Leather cloth			5.40
MEAT INSPECTION.									
Miscellaneous.									
E. Morrison Paper Co						Rubber bands			32.00
John C. Parker						Blank books, files, and ink			78.37
Rudolph, West & Co						Nail puller and wire cutter			7.07
The J. F. W. Dorman Co						Ink pads and rubber figures			76.94
Chadwick Copying Book Co						Copying books			107.04
Chas. O. Brockway						Interstate stamps and "condemned" tags.			4,839.24
Easton & Rupp						Typewriter oil			.96
R. Carter Ballantyne						McGill fasteners			5.48
J. Ottmann Lithographnig Co.						Bound certificates of inspection.			1,145.63
Dennison Manufacturing Co.						Meat-inspection tags			2,375.10
H. F. Miller & Son						1 gallon, and round cans			29.00
Austin Smith						Blotting paper			14.64
C. S. Braisted						Pencils, pens, and penholders			40.20
J. C. Ergood & Co						Soap (I. & B.)			18.07
D. H. Burrell & Co						Poplar boxes			28.82
Edw. F. Ebinger						Drayage			3.51
Jas. S. Topham						100 leather belts			25.00

a Per month.

List of persons employed and disbursements made during the fiscal year ended June 30, 1898—Continued.

SALARIES AND EXPENSES—Continued.

Name.	Designation.	Appointed.	Services ended.	Compensation.		Disbursements.			
				Per diem.	Per annum.	Miscellaneous items.	Salaries.	Traveling.	Miscellaneous.
MICROSCOPIC INSPECTION—continued.									
Miscellaneous—Continued.									
Thomas Manufacturing Co.						Tag fasteners			$134.38
Chicago Car Seal and Manufacturing Co.						Sample boxes			34.00
John P. Nawrath						White twine			9.50
Rudolph, West & Co						Brass padlocks			56.28
George A. Shehan						Lumber			4.50
The Grant Manufacturing Co.						Lead discs			25.00
Spencer Lens Co						Stages for microscopes			342.60
Total							$161,554.00	$262.47	10,159.38

55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 56.

REPORT

OF THE

NATIONAL ACADEMY OF SCIENCES

FOR

THE YEAR 1898.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1899.

LETTER

FROM THE

PRESIDENT OF THE NATIONAL ACADEMY OF SCIENCES,

TRANSMITTING

A REPORT OF THE OPERATIONS OF THE NATIONAL ACADEMY OF SCIENCES DURING THE YEAR 1898.

JANUARY 10, 1899.—Ordered to be printed.

NATIONAL ACADEMY OF SCIENCES,
Washington, D. C., January 1, 1899.

SIR: In conformity with the requirements of the act of incorporation, approved March 3, 1863, I have the honor to submit herewith a report of the operations of the National Academy of Sciences for the past year.

Very respectfully,

WOLCOTT GIBBS,
President of the National Academy of Sciences.

The PRESIDENT OF THE SENATE.

ACT OF INCORPORATION.

AN ACT to incorporate the National Academy of Sciences.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Louis Agassiz, Massachusetts; J. H. Alexander, Maryland; S. Alexander, New Jersey; A. D. Bache, at large; F. A. P. Barnard, at large; J. G. Barnard, United States Army, Massachusetts; W. H. C. Bartlett, United States Military Academy, Missouri; U. A. Boyden, Massachusetts; Alexis Caswell, Rhode Island; William Chauvenet, Missouri; J. H. C. Coffin, United States Naval Academy, Maine; J. A. Dahlgren, United States Navy, Pennsylvania; J. D. Dana, Connecticut; Charles H. Davis, United States Navy, Massachusetts; George Engelmann, Saint Louis, Mo.; J. F. Frazer, Pennsylvania; Wolcott Gibbs, New York; J. M. Gilliss, United States Navy, District of Columbia; A. A. Gould, Massachusetts; B. A. Gould, Massachusetts; Asa Gray, Massachusetts; A. Guyot, New Jersey; James Hall, New York; Joseph Henry, at large; J. E. Hilgard, at large, Illinois; Edward Hitchcock, Massachusetts; J. S. Hubbard, United States Naval Observatory, Connecticut; A. A. Humphreys, United States Army, Pennsylvania; J. L. Le Conte, United States Army, Pennsylvania; J. Leidy, Pennsylvania; J. P. Lesley, Pennsylvania; M. F. Longstreth, Pennsylvania; D. H. Mahan, United States Military Academy, Virginia; J. S. Newberry, Ohio; H. A. Newton, Connecticut; Benjamin Pierce, Massachusetts; John Rodgers, United States Navy, Indiana; Fairman Rogers, Pennsylvania; R. E. Rogers, Pennsylvania; W. B. Rogers, Massachusetts; L. M. Rutherfurd, New York; Joseph Saxton, at large; Benjamin Silliman, Connecticut; Benjamin Silliman, junior, Connecticut; Theodore Strong, New Jersey; John Torrey, New York; J. G. Totten, United States Army, Connecticut; Joseph Winlock, United States Nautical Almanac, Kentucky; Jeffries Wyman, Massachusetts; J. D. Whitney, California; their associates and successors duly chosen, are hereby incorporated, constituted, and declared to be a body corporate, by the name of the National Academy of Sciences.

SEC. 2. *And be it further enacted*, That the National Academy of Sciences shall consist of not more than fifty ordinary members, and the said corporation hereby constituted shall have power to make its own organization, including its constitution, by-laws, and rules and regulations; to fill all vacancies created by death, resignation, or otherwise; to provide for the election of foreign and domestic members, the division

into classes, and all other matters needful or usual in such institution. and to report the same to Congress.

SEC. 3. *And be it further enacted*, That the National Academy of Sciences shall hold an annual meeting at such place in the United States as may be designated, and the Academy shall, whenever called upon by any Department of the Government, investigate, examine, experiment, and report upon any subject of science or art, the actual expense of such investigations, examinations, experiments, and reports to be paid from appropriations which may be made for the purpose, but the Academy shall receive no compensation whatever for any services to the Government of the United States.

Approved, March 3, 1863.

AN ACT to amend the act to incorporate the National Academy of Sciences.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the act to incorporate the National Academy of Sciences, approved March third, eighteen hundred and sixty-three, be, and the same is hereby, so amended as to remove the limitation of the number of ordinary members of said Academy as provided in said act.

Approved, July 14, 1870.

DEPARTMENT OF STATE, *June 10, 1882.*

True copies.

SEVELLON A. BROWN,
Chief Clerk.

AN ACT to authorize the National Academy of Sciences to receive and hold trust funds for the promotion of science, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the National Academy of Sciences, incorporated by the act of Congress approved March third, eighteen hundred and sixty-three, and its several supplements, be, and the same is hereby, authorized and empowered to receive bequests and donations, and hold the same in trust, to be applied by the said Academy in aid of scientific investigations, and according to the will of the donors.

Approved, June 20, 1884.

DEPARTMENT OF STATE, *June 24, 1884.*

A true copy.

SEVELLON A. BROWN,
Chief Clerk.

REPORT

OF

THE NATIONAL ACADEMY OF SCIENCES.

SESSIONS OF THE NATIONAL ACADEMY.

During the year 1898 the Academy held three sessions. The first was the regular annual session, held at Washington, April 19 to 22, inclusive. The second was a scientific session, held at New Haven, November 15 to 17. The third, a special session, held at New Haven, November 16, for the transaction of business.

ANNUAL MEETING.

[Held at Washington, April 19 to 22, 1898.]

The session was held in the Congressional Library, the President, Mr. Wolcott Gibbs, presiding.

The following-named members were present during the session: Abbe, Agassiz, Barker, Barus, Billings, Brewer, Bell, Brooke, Dall, Elkin, Emmons, Gibbs (W.), Gilbert, Gill, Gooch, Hague, Hall (A.), Hall (J.), Hastings, Hill (G. W.), Hyatt, Langley, Marsh, Mendenhall, Michelson, Newcomb, Putnam, Powell, Remsen, Rowland, Schott, Walcott, Welsh, White, Wright.

The President reported that no new business from Congress or from the departments had required the attention of the Academy since the publication of his last annual report to Congress, and stated that he had, as requested by the council, made suitable acknowledgment to Miss Alice Bache Gould for her munificent gift to the Academy.

To balance brought forward:							
Cash	$323.69	$3,275.45	$1,440.39	$1,241.96	$1,435.83	.....	.....
Invested	*a* 500.00	*b* 1,000.00	*a* 500.00 *c* 593.71	.....	*d* 596.57	.....	.....
Interest received during 1897-98	18.26	2,617.57	1,037.93	428.20	448.69	$137.18	.....
Tax paid by members	410.00	.....	.....	.....	.....	.....	.....
Total to be accounted for	1,251.95	6,893.02	3,572.03	1,670.16	2,481.09	137.18	.....
Disbursed, 1897-98	384.90	3,025.06	61.69	10.01	13.30	$137.18	.....
Balance:							
Cash	367.05	2,867.96	2,416.63	1,660.15	971.22	.....	.....
Invested	*a* 500.00	*b* 1,000.00	*a* 500.00 *c* 593.71	.....	*e* 1,496.57	.....	.....
Total accounted for	1,251.95	6,893.02	3,572.03	1,670.16	2,481.09	137.18	.....
Available (less obligations)	367.05	1,615.96	2,416.63	1,660.15	971.22	.....	.....

a District of Columbia bonds, 3.65 per cent.
b Dos Passos loan, 5 per cent.
c Earnshaw loan, 6 per cent.
d Webb loan, 5 per cent.
e Sisters of the Visitation, 4 per cent loan.

The treasurer's bond was renewed.

Very respectfully,

J. S. BILLINGS, *Treasurer.*

REPORT OF THE COMMITTEE ON SECURITIES.

The committee to examine the securities reported that they had examined the securities and papers deposited in the lock box of the Academy, at the building of the Washington Safe Deposit Company, and found them to correspond with the list furnished by the treasurer.

CLEVELAND ABBE.
THEODORE N. GILL.
ARNOLD HAGUE.

REPORT OF THE AUDITING COMMITTEE.

LIST OF PAPERS PRESENTED AT THE APRIL SESSION.

The Coral Reefs of Fiji. A. Agassiz.

The Fiji Bololo. A. Agassiz and W. McM. Woodworth.

The Acalephs of Fiji. A. Agassiz and A. G. Mayer.

The Variation in Virulence of the Colon Bacillus. J. S. Billings.

Biographical Memoir of Edward D. Cope. Theo. Gill.

New Classification of Nautiloidea. Alpheus Hyatt.

A New Spectroscope. A. A. Michelson.

On the Hydrolysis of Acid Amides. Ira Remsen and E. E. Reid.

The Question of the Existence of Active Oxygen. (Read by title.) Ira Remsen and W. A. Jones.

On the Product Formed by the Action of Benzenesulphonchloride on Urea. (Read by title.) Ira Remsen and J. W. Lawson.

On Double Halides Containing Organic Bases. Ira Remsen.

McCrady's Gymnophthalmata of Charleston Harbor. W. K. Brooks.

Ballistic Galvanometry with a Countertwisted Torsion System. Carl Barus.

A Consideration of the Conditions Governing Apparatus for Astronomical Photography. Charles S. Hastings.

The Use of Graphic Methods in Questions of Disputed Authorship, with an Application to the Shakespeare-Bacon Controversy. T. C. Mendenhall.

A Method for Obtaining a Photographic Record of Absorption Spectra. A. W. Wright.

Theories of Latitude Variation. H. Y. Benedict. Presented by A. Hall.

Progress in the New Theory of the Moon's Motion. E. W. Brown. Introduced by S. Newcomb.

On the Variation of Latitude and the Aberration-Constant. Charles L. Doolittle. Introduced by S. C. Chandler.

A Curious Inversion in the Wave Mechanism of the Electromagnetic Theory of Light. Carl Barus.

AMENDMENT TO THE CONSTITUTION.

The following report from council on an amendment to the constitution was adopted by the Academy and the amendment will be voted on at the session in April, 1899:

SEC. 5. The Academy is to be divided into six standing committees. In this classification a member who is eminent in more than one subject may be assigned to a corresponding number of committees. The classification shall be the following:

1. Mathematics and Astronomy.
2. Physics and Engineering.
3. Chemistry.
4. Geology and Paleontology
5. Biology.
6. Anthropology.

In nominating for membership in the Academy, a statement must be made as to the subject or subjects in which the person nominated is eminent. Every nomination must be submitted, through the secretary, to all the members of the committee or committees representing the subject or subjects in which the person nominated is stated to be eminent; and, in order that his name may be brought before the Academy for election, he must receive the votes of a majority of the members of the committee or committees to which his name has been referred.

During the year ending January 1, 1899, the Academy lost by death Prof. William A. Rogers and Prof. James Hall.

The treasurer of the Academy, Dr. John S. Billings, having presented his resignation, Mr. Charles D. Walcott was elected in his place.

Messrs. Billings, Bowditch, Brush, Hague, Marsh, and Newcomb were elected members of the council for the ensuing academic year.

ELECTIONS.

No new members were elected at the annual session of the Academy, but the following named foreign associates were chosen: Adolph (Ritter von) Baeyer, Munich; David Gill, Cape Town; Felix Klein, Göttingen; Henri De Lacaze-Duthiers, Paris; Lord Lister, London; Henri Moissan, Paris; Henri Poincaré, Paris; Lord Rayleigh, London; Edouard Strasburger, Bonn; Edouard Suess, Vienna; Karl Alfred (Ritter von) Zittel, Munich.

REPORTS FROM TRUST FUNDS.

The trustees of the Lawrence Smith fund recommended that the sum of $1,000 be granted to the Yale University Observatory for the purpose of photographing the trails of meteors. Formal permission to make the appropriation was accorded by the Academy.

The board of directors of the Benjamin Apthorp Gould fund reported that having duly accepted their appointment they, at a first meeting held November 18, 1897, organized by the election of a president and secretary, and that, awaiting the accumulation of a sufficient accrued income from the fund, no appropriation had been made.

The board of directors of the Bache fund reported that the following appropriations have been made during the past year:

May 17. To Prof. H. A. Rowland, to continue investigations on the solar spectrum and the spectra of the elements	$1,000
May 25. To Prof. Lewis Boss, to continue investigations on the proper motions of the stars	1,000
May 25. To Dr. T. C. Mendenhall, for a determination of absolute gravity	500

SCIENTIFIC SESSION.

[Held in New Haven November 15 and 16, 1898.]

A scientific session, for the reading of papers only, having been called by the council, the Academy met at the Sheffield Scientific School, at New Haven. The President, Mr. Wolcott Gibbs, presiding.

The following-named members were present during the session: Barker, Barus, Bowditch, Brewer, Brush, Chittenden, Dana, Elkin, Emmons, Gibbs (J. W.), Gibbs (W.), Gooch, Hague, Hall, Hastings, Marsh, Michelson, Minot, Mitchell, Morley, Newcomb, Remsen, Rowland, Smith, Verrill, Woodward, Wright—27.

The following papers were presented:

Anatomy of *Nautilus pompilius*. (By title.) W. K. Brooks and L. E. Griffin.

On Solid Solutions of Colloidal Glass. C. Barus.

Three Phases of Vertebrate Development. Charles S. Minot.

Notes on Mammalian Embryology. Charles S. Minot.

The Influence of Alcohol and Alcoholic Fluids on Digestion. R. H. Chittenden.

On the Conditions Modifying the Excretion of Kynuremic Acid. Lafayette B. Mendel. (By invitation.)

Perturbations of Minerva, with a Preliminary Determination of its Orbit, by W. S. Eichelberger. (By title.) Presented by Simon Newcomb.

On a Series of Native Skulls from New Guinea. O. C. Marsh.

On the Reputed Prefrontal Bones in Recent Mammals. O. C. Marsh.

Sodium Tungstate as a Retainer for Boric Acid. F. A. Gooch and Louis Cleveland Jones.

The Ammonium-Magnesium Phosphate of Analysis. F. A. Gooch and Martha Austin.

The Chemical Composition of Tourmaline. S. L. Penfield. (By invitation.)

On the Nature and Origin of the Marine Fauna of Bermuda. A. E. Verrill.

On the Ability Possessed by Certain Animals to Recover after Complete Freezing. A. E. Verrill.

Further Researches on the Two Isomeric Chlorides of Orthosulphobenzoic Acid: A Study in Tautomerism. Ira Remsen.

On the Brecciated Fossiliferous Marble from Kishiu, Japan. O. C. Marsh.

On some Rare Antiquities from Mexico. O. C. Marsh.

Report upon Work in Spectrum Analysis Carried on by Help of the Bache Fund. H. A. Rowland.

Observations on the Zeeman Effect with the Echelon-Spectroscope. A. A. Michelson.

BUSINESS MEETING.

A business meeting of the Academy called by the Council to consider the report of the President to Congress, and such other business as might be presented, was held November 16. The President presided.

The following-named members were present: Barker, Bowditch, Brush, Chittenden, Emmons, Gibbs (J. W.), Gibbs (W.), Gooch, Hall,

Hastings, Michelson, Minot, Mitchell, Morley, Remsen, Rowland, Wright.

The recommendation of the council that the President be authorized to include in his annual report to Congress the proceedings of the present meeting, as well as those of the meeting at Washington in April, 1898, and also any matters relating to Government business that may be submitted to the Academy, was approved. The President presented and read a detailed outline of his report to Congress for the year ending January 1, 1899.

APPENDICES.

APPENDIX A.

CONSTITUTION AND RULES OF THE NATIONAL ACADEMY OF SCIENCES.

As amended and adopted April 17, 1872, and further amended April 20, 1875; April 21, 1881; April 19, 1882: April 18, 1883; April 19, 1888; April 18, 1895.

PREAMBLE.

Empowered by the act of incorporation enacted by Congress, and approved by the President of the United States on the 3d day of March, A. D. 1863, and in conformity with the amendment to said act, approved July 14, 1870, the National Academy of Sciences adopts the following amended constitution and rules:

ARTICLE I.—OF MEMBERS.

SEC. 1. The Academy shall consist of members, honorary members, and foreign associates. Members must be citizens of the United States.

SEC. 2. Members who, from age or inability to attend the sessions of the Academy, wish to resign the duties of active membership, may, at their own request, be transferred to the roll of honorary members by a vote of the Academy.

SEC. 3. The Academy may elect fifty foreign associates.

SEC. 4. Honorary members and foreign associates shall have the privilege of attending the meetings, and of reading and communicating papers to the Academy, but shall take no part in its business, shall not be subject to its assessments, and shall be entitled to a copy of the publications of the Academy.

ARTICLE II.—OF THE OFFICERS.

SEC. 1. The officers of the Academy shall be a president, a vice-president, a foreign secretary, a home secretary, and a treasurer, all of whom shall be elected for a term of six years, by a majority of votes present, at the first stated session after the expiration of the current terms, provided that existing officers retain their places until their successors are elected. In case of a vacancy, the election for six years shall be held in the same manner at the session when such vacancy occurs, or at the next stated session thereafter, as the Academy may direct. A vacancy in the office of treasurer or home Secretary may,

however, be filled by appointment of the president of the Academy until the next stated session of the Academy.

SEC. 2. The officers of the Academy, together with six members to be elected by the Academy at the first stated session in each year, shall constitute a council for the transaction of such business as may be assigned to them by the constitution or the Academy.

SEC. 3. The president of the Academy, or, in case of his absence or inability to act, the vice-president, shall preside at the meetings of the Academy and of the council; shall name all committees except such as are otherwise especially provided for; shall refer investigations required by the Government of the United States to members especially conversant with the subjects, and report thereon to the Academy at its sessions next ensuing; and, with the council, shall direct the general business of the Academy.

It shall be competent for the president, in special cases, to call in the aid, upon committees, of experts or men of special attainments, not members of the Academy.

SEC. 4. The foreign and home secretaries shall conduct the correspondence proper to their respective departments, advising with the president and council in cases of doubt, and reporting their action to the Academy at one of the stated sessions in each year.

It shall be the duty of the home secretary to give notice to the members of the place and time of all meetings, of all nominations for membership, and of all proposed amendments to the constitution.

The minutes of each session shall be duly engrossed before the next stated session, under the direction of the home secretary.

SEC. 5. The treasurer shall attend to all receipts and disbursements of the Academy, giving such bond and furnishing such vouchers as the council may require. He shall collect all dues from members, and keep a set of books showing a full account of receipts and disbursements. He shall present a general report at the April session. He shall be the custodian of the corporate seal of the Academy.

ARTICLE III.—OF THE MEETINGS.

SEC. 1. The Academy shall hold one stated session in each year, in the city of Washington, on the third Tuesday in April, and another may be held at such place and time as the council shall determine.

Special sessions of the Academy may be called, by order of eight members of the council, at such place and time as may be designated in the call.

Scientific sessions of the Academy may be held at times and places to be designated by a majority of the council.

SEC. 2. The names of the members present at each daily meeting shall be recorded in the minutes, and the members present at any meeting shall constitute a quorum for the transaction of business.

SEC. 3. Scientific meetings of the Academy, unless otherwise ordered by a majority of the members present, shall be open to the public; those for the transaction of business, closed.

SEC. 4. The stated meetings of the council shall be held during the stated or special sessions of the Academy. Special sessions may be convened at the call of the president and two members of the council, or of four members of the council.

SEC. 5. No member who has not paid his dues shall take part in the business of the Academy.

ARTICLE IV.—OF ELECTIONS AND RESIGNATIONS.

SEC. 1. All elections shall be by ballot, and each election shall be held separately unless otherwise ordered by this constitution.

SEC. 2. The time for holding an election of officers shall be fixed by the Academy at least one day before the election is held.

SEC. 3. The six additional members of the council shall be elected, on any day after the first of the first stated session in each year, by each voter inscribing six names on his ballot, and those six who have received more votes than any others shall be declared elected. If two or more names have received the lowest number of votes that would elect, additional balloting shall be had for as many members as remain each time to be elected until the number is full.

The term of the members so elected shall commence at the close of the session at which they are elected and continue until the close of the first stated session in the next year.

SEC. 4. Nominations of members may be made in writing, signed by any five members of the Academy, at any stated session, to be voted on at the next stated session held in Washington, and each nomination shall, at the time of election, be accompanied by a written list of the original works of the nominee.

SEC. 5. Proposed amendment to the constitution: "The Academy shall be divided into six standing committees. In this classification, a member who is eminent in more than one subject may be assigned to a corresponding number of committees. The classification shall be the following:

"1. Mathematics and Astronomy.

"2. Physics and Engineering.

"3. Chemistry.

"4. Geology and Paleontology.

"5. Biology.

"6. Anthropology.

"In nominating for membership in the Academy, a statement must be made as to the subject or subjects in which the person nominated is eminent. Every nomination must be submitted, through the secretary, to all the members of the committee or committees representing the subject or subjects in which the person nominated is stated to be eminent; and, in order that his name may be brought before the Academy

for election, he must receive the votes of a majority of the members of the committee or committees to which his name has been referred."

Elections for membership shall be held in the following manner: Each member may inscribe on a ballot not more than five names of nominees selected from the list. Absent members may send such ballots to the home secretary. From the seven names receiving the highest number of votes in this preference ballot the members present may proceed to elect new members in the following manner: At each ballot each member present may vote for not exceeding three persons, and the person receiving the highest number of votes shall be declared elected, provided that he receive two-thirds of the votes cast and that his name appear on not less than twenty ballots; and provided further, that the number of members of the Academy be not already one hundred or over, in which case to be declared to be elected he must receive four-fifths of the votes cast, and his name must appear on at least twenty-five ballots.

Should several candidates have the same minimum number of votes on the preference list, the requisite number for completing the list shall be selected from them by a two-thirds vote of the members present.

Election of members shall be held only at the regular stated session of each year held in Washington, and not more than five members shall be elected at that session.

Before and during elections a discussion of the merits of nominees will be in order.

The election of members may be suspended at any time by a majority vote of the members present.

SEC. 6. Every member elect shall accept his membership, personally or in writing, before the close of the next stated session after the date of his election. Otherwise, on proof that the secretary has formally notified him of his election, his name shall not be entered on the roll of members.

SEC. 7. Foreign associates may be nominated by a committee of five members to be appointed for that purpose by the President and elected at any stated session by a two-thirds vote of the members present. The election shall be had by each member indicating on a ballot those names for which he votes, and those nominees whose names appear on two-thirds of the ballots shall be declared elected.

SEC. 8. A diploma, with the corporate seal of the Academy and the signatures of the officers, shall be sent by the appropriate secretary to each member on his acceptance of his membership, and to foreign associates on their election.

SEC. 9. Resignations shall be addressed to the President and acted on by the Academy.

SEC. 10. Whenever a member has not paid his dues for four successive years, the treasurer shall report the fact to the council, which may report the case to the Academy with the recommendation that the per-

son thus in arrears be declared to have forfeited his membership. If this recommendation be approved by two-thirds of the members present, the said person shall no longer be a member of the Academy and his name shall be dropped from the roll.

ARTICLE V.—OF SCIENTIFIC COMMUNICATIONS, PUBLICATIONS, AND REPORTS.

SEC. 1. Communications on scientific subjects shall be read at scientific meetings of the Academy, and papers by any member may be read by the author or by any other member, notice of the same having been previously given to the secretary.

SEC. 2. Any member of the Academy may read a paper from a person who is not a member, and shall not be considered responsible for the facts or opinions expressed by the author, but shall be held responsible for the propriety of the paper.

Persons who are not members may read papers on invitation of the president, with the advice of the council.

SEC. 3. The Academy may provide for the publication, under the direction of the council, of proceedings, memoirs, and reports.

APPENDIX B.

RULES.

I. In the absence of any officer a member shall be chosen to perform his duties temporarily, by a plurality of viva voce votes, upon open nominations.

II. On the first day of each stated session, immediately after calling the roll of members, a recording secretary shall be elected, by a plurality of members present, to assist the home secretary in keeping the records of the session.

III. The accounts of the treasurer shall be referred to an auditing committee of three members, to be appointed by the president at the meeting at which the accounts are presented, which committee shall report before the close of that session, and shall then be discharged.

The bonds, securities, and other property owned or held in trust by the Academy shall be inspected and verified by a committee to be annually appointed by the president. The report of this committee shall be presented to the Academy at its first stated session in each year and referred with the accounts to the auditing committee.

IV. A committee of arrangements, consisting of five members, shall be appointed by the president for each stated session of the Academy. This committee shall meet not less than two weeks previous to each session. It shall be in session during the meetings to make arrangements for the reception of the members, to arrange the business of each day, and, in general, to attend to all business and scientific arrangements.

It shall be the duty of the committee of arrangements to ascertain the length of time required for reading the several memoirs presented and, when it appears advisable, to recommend a limit of time to be occupied in their discussion.

V. At the meetings the order of business shall be as follows:

1. Chair taken by the president, or, in his absence, by the vice-president.
2. Roll of members called by home secretary.
3. Minutes of the preceding meeting read and approved.
4. Stated business.
5. Reports of president, secretaries, treasurer, and committees.
6. Business from council.

7. Other business.

8. On the last day of the session the rough minutes of that day's proceedings are to be read for correction.

VI. The rules of order of the Academy shall be those of the Senate of the United States, unless suspended by unanimous consent.

VII. Unless otherwise ordered by the Academy, the scientific meetings at the April session shall be held in the afternoon, the mornings being reserved for business.

VIII. The death of members shall be announced by the president on the last day of any session, when a member shall be selected by the president to furnish a biographical notice of the deceased at the next stated session. If such notice be not then furnished, another member may be selected by the president in place of the first, and so on until the duty is performed.

IX. The secretaries will receive memoirs at any time, and report the date of their reception at the next session; but no memoir shall be published unless it has been read before the Academy.

X. Memoirs shall date, in the records of the Academy, from the date of their presentation to the Academy, and the order of their presentation shall be so arranged by the secretary that, so far as may be convenient, those upon kindred topics shall follow one another.

XI. Papers from persons not members read before the Academy and intended for publication shall be referred at the meeting at which they are read to a committee of members competent to judge whether the paper is worthy of publication. Such committee shall report to the Academy as early as practicable, and not later than the next stated session.

XII. The printing of the Academy shall be under the charge of the committee of publication, to consist of the home secretary and four other members to be named by the president, with the advice and consent of the council.

XIII. The annual report of the Academy may be accompanied by a memorial to Congress in regard to such investigations and other subjects as may be deemed advisable, recommending appropriations therefor when necessary.

XIV. The proper secretary shall acknowledge all donations made to the Academy, and shall report them at the next stated session.

XV. The books, apparatus, archives, and other collections of the Academy shall be deposited in some safe place in the city of Washington. A list of the articles so deposited shall be kept by the home secretary, who is authorized to employ a clerk to take charge of them.

XVI. A stamp corresponding to the corporate seal of the Academy shall be kept by the secretaries, who shall be responsible for the due marking of all books and other objects to which it is applicable.

Labels or other proper marks of similar device shall be placed upon objects not admitting of the stamp.

XVII. The treasurer is authorized to defray, when approved by the president, all the proper expenses of committees appointed to make scientific investigations at the request of Departments of the Government, and in each case to look to the Department requesting the investigation for reimbursement to the Academy.

XVIII. Nominations for membership should state the full name, residence, the official position, and the special scientific studies of the candidate. A form of nomination shall be prepared by the home secretary.

XIX. At least sixty days before the election the members signing the nomination should furnish the home secretary with a sufficient number of printed copies of a list of the more important original works of the nominee to enable the secretary to furnish a copy to each member of the Academy.

XX. Ballots for election of members may be sent by sealing them up in a blank envelope, and inclosing this in another, across the back of which is written the name of the sender, and which is addressed to the home secretary; such envelopes will be opened only by the tellers.

XXI. All discussions as to the claims and qualifications of nominees at meetings of the Academy will be held strictly confidential, and remarks and criticisms then made may be communicated to no person who was not a member of the Academy at the time of the discussion.

XXII. Any rule of the Academy may be amended, suspended, or repealed, on the written motion of any two members, signed by them, and presented at a stated session of the Academy, provided the same shall be approved by a majority of the members present.

By a resolution adopted January 12, 1864, the President is ex officio a member of all government committees of the Academy.

APPENDIX C.

ORGANIZATION OF THE ACADEMY, 1899.

	Expiration of term.
GIBBS, WOLCOTT, *President*	April, 1901
HALL, ASAPH, *Vice-President*	April, 1903
AGASSIZ, A., *Foreign Secretary*	April, 1901
REMSEN, IRA, *Home Secretary*	April, 1903
WALCOTT, CHARLES D., *Treasurer*	April, 1904

ADDITIONAL MEMBERS OF COUNCIL, 1898-99.

BILLINGS, J. S.
BOWDITCH, H. P.
BRUSH, G. J.
HAGUE, A.
MARSH, O. C.
NEWCOMB, S.

COMMITTEES OF THE ACADEMY.

On Nominations of New Members.

[Showing the mode of classification of members under the proposed amendment to the constitution.]

1. Mathematics and Astronomy.
   - BOSS, L.
   - CHANDLER, S. C.
   - ELKIN, W. L.
   - GIBBS, J. W.
   - HALL, A.
   - HILL, G. W.
   - HOLDEN, E. S.
   - NEWCOMB, S.
   - PEIRCE, C. S.
   - PICKERING, E. C.
   - WOODWARD, R. S.
2. Physics and Engineering.
   - ABBE, C.
   - ABBOT, H. L.
   - BARKER, G. F.
   - BARUS, C.
   - BELL, A. G.
   - COMSTOCK, C. B.
   - DAVIDSON, G.
   - HASTINGS, C. S.
   - LANGLEY, S. P.
   - MENDENHALL, T. C.
   - MICHELSON, A. A.
   - MITCHELL, H.
   - MORLEY, E. W.
   - MORTON, H.

2. Physics and Engineering—Continued.
   - ROGERS, F.
   - ROOD, O. N.
   - ROWLAND, H. A.
   - SCHOTT, C. A.
   - SELLERS, W.
   - TROWBRIDGE, J.
   - WRIGHT, A. W.
3. Chemistry.
   - BRUSH, G. J.
   - CHANDLER, C. F.
   - CHITTENDEN, R. H.
   - CRAFTS, J. M.
   - DANA, E. S.
   - GIBBS, W.
   - GOOCH, F. A.
   - HILGARD, E. W.
   - HILL, H. B.
   - JACKSON, C. L.
   - JOHNSON, S. W.
   - MICHAEL, A.
   - MORLEY, E. W.
   - REMSEN, I.
4. Geology and Paleontology.
   - DALL, W. H.
   - DUTTON, C. E.
   - EMMONS, S. F.

4. Geology and Paleontology—Cont'd.
   GILBERT, G. K.
   HAGUE, A.
   KING, C.
   LESLEY, J. P.
   PUMPELLY, R.
   WALCOTT, C. D.
   WHITE, C. A.
5. Biology.
   AGASSIZ, A.
   ALLEN, J. A.
   BREWER, W. H.
   BROOKS, W. K.
   COUES, E.
   FARLOW, W. G.
   GILL, T. N.
   GOODALE, G. L.
   HYATT, A.
   LE CONTE, J.

5. Biology—Continued.
   MARSH, O. C.
   MAYO-SMITH, R.
   MORSE, E. S.
   PACKARD, A. S.
   PUTNAM, F. W.
   SARGENT, C. S.
   SCUDDER, S. H.
   SMITH, S, I.
   VERRILL, A. E.
   WHITMAN, C. O.
6. Anthropology.
   BILLINGS, J. S.
   BOWDITCH, H. P.
   MINOT, C. S.
   MITCHELL, S. W.
   POWELL, J. W.
   WELCH, W. H.
   WOOD, H. C.

On Weights, Measures, and Coinage.

MENDENHALL, T. C.
MICHELSON, A. A.
NEWCOMB, S.
PEIRCE, C. S.
YOUNG, C. A.

On the Election of Foreign Associates.

HALL, A.
AGASSIZ, A.
MITCHELL, S. W.
NEWCOMB, S.

On Publication.

THE HOME SECRETARY.
BILLINGS, J. S.
MENDENHALL, T. C.
NEWCOMB, S.
POWELL, J. W.

On Publications of the Academy.

GILL, T. N.

On the Relation of the Academy to the Government.

THE PRESIDENT.
VICE-PRESIDENT.
SECRETARIES.
BILLINGS, J. S.
BRUSH, G. J.
POWELL, J. W.

TRUST FUNDS.

Board of Direction of the Bache Fund.

GIBBS, WOLCOTT.
CHANDLER, S. C.
SCUDDER, S. H.

Board of Trustees of the Watson Fund.

NEWCOMB, S., *Chairman.*
HALL, A.

The Henry Draper Fund.

BARKER, G. F., *Chairman.*
NEWCOMB, S.
TROWBRIDGE, J.
WRIGHT, A. W.
YOUNG, C. A.

The J. Lawrence Smith Fund.

BRUSH, G. J., *Chairman.* JOHNSON, S. W.
HALL, A. PUMPELLY, R.
REMSEN, IRA.

The Benjamin Apthorp Gould Fund.

HALL, ASAPH. CHANDLER, S. C.
BOSS, LEWIS.

The Barnard Medal.

CHANDLER, C. F., *Chairman.* COMSTOCK, C. B.
BOSS, LEWIS. DANA, E. S.

The Wolcott Gibbs Fund.

JACKSON, C. L. REMSEN, IRA.
DROWN, T. M.

MEMBERS OF THE NATIONAL ACADEMY OF SCIENCES, JANUARY 1, 1899.

		Date of election.
ABBE, CLEVELAND	*2017 I st. NW., Washington, D. C.*	1879
ABBOT, HENRY L., U. S. A	*Army Building, New York City.*	1872
AGASSIZ, ALEXANDER	*Cambridge, Mass.*	1866
ALLEN, J. ASAPH	*American Museum, New York City.*	1876
BARKER, GEORGE F	*3909 Locust st., Philadelphia, Pa.*	1876
BARUS, CARL	*Providence, R. I.*	1892
BELL, A. GRAHAM	*1331 Connecticut ave., Washington, D. C.*	1883
BILLINGS, JOHN S., U. S. A	*32 E. Thirty-first st., New York.*	1883
BOSS, LEWIS	*Albany, N. Y.*	1889
BOWDITCH, HENRY P	*Jamaica Plain, Mass.*	1887
BREWER, WILLIAM H	*418 Orange st., New Haven, Conn.*	1880
BROOKS, W. K	*Johns Hopkins University, Baltimore, Md.*	1884
BRUSH, GEORGE J	*14 Trumbull st., New Haven, Conn.*	1868
CHANDLER, CHARLES F	*New York City.*	1874
CHANDLER, SETH C	*16 Craigie st., Cambridge, Mass.*	1888
CHITTENDEN, RUSSELL H	*New Haven, Conn.*	1890
COMSTOCK, CYRUS B., U. S. A	*Army Building, New York City.*	1884
COUES, ELLIOTT	*1726 N st. NW., Washington, D. C.*	1877
CRAFTS, JAMES M	*59 Marlboro' st., Boston, Mass.*	1872
DALL, WILLIAM H	*Washington, D. C.*	1897
DANA, EDWARD S	*New Haven, Conn.*	1884
DAVIDSON, GEORGE	*530 California st., San Francisco, Cal.*	1874
DUTTON, CLARENCE E., U. S. A	*San Antonio, Tex.*	1884
ELKIN, WILLIAM L	*New Haven, Conn.*	1895
EMMONS, SAMUEL F	*Washington, D. C.*	1892
FARLOW, W. G	*Cambridge, Mass.*	1879
GIBBS, JOSIAH WILLARD	*New Haven, Conn.*	1879
GIBBS, WOLCOTT	*Newport, R. I.*	——
GILBERT, GROVE K	*Washington, D. C.*	1883
GILL, THEODORE N	*Washington, D. C.*	1873
GOOCH, FRANK A	*New Haven, Conn.*	1897
GOODALE, GEORGE L	*Cambridge, Mass.*	1890
HAGUE, ARNOLD	*U. S. Geological Survey, Washington, D. C.*	1885
HALL, ASAPH	*Cambridge, Mass.*	1875
HASTINGS, CHARLES S	*New Haven, Conn.*	1889

		Date of election.
HILGARD, EUGENE W	*Berkeley, Cal.*	1872
HILL, GEORGE W	*West Nyack, N. Y.*	1874
HILL, HENRY B	*Cambridge, Mass.*	1883
HOLDEN, EDWARD S	*Century Association, New York City.*	1885
HYATT, ALPHEUS	*Soc. of Nat. History, Boston, Mass.*	1875
JACKSON, CHARLES L	*Cambridge, Mass.*	1883
JOHNSON, SAMUEL W	*54 Trumbull st., New Haven, Conn.*	1866
KING, CLARENCE	*Century Association, New York City.*	1876
LANGLEY, SAMUEL P	*Washington, D. C.*	1876
LE CONTE, JOSEPH	*Berkeley, Cal.*	1875
LESLEY, J. PETER	*711 Walnut st., Philadelphia, Pa.*	—
MARSH, O. C	*New Haven, Conn.*	1874
MAYO-SMITH, RICHMOND	*305 W. 77th st., New York City.*	1890
MENDENHALL, THOMAS C	*Worcester, Mass.*	1887
MICHAEL, ARTHUR	*Tufts College, Mass.*	1889
MICHELSON, ALBERT A	*Chicago, Ill.*	1888
MINOT, CHARLES S	*Boston, Mass.*	1897
MITCHELL, HENRY	*Nantucket, Mass.*	1885
MITCHELL, S. WEIR	*1524 Walnut st., Philadelphia, Pa.*	1865
MORLEY, EDWARD W	*Adelbert College, Cleveland, Ohio.*	1897
MORSE, EDWARD S	*P. O. Box 268, Salem, Mass.*	1876
MORTON, HENRY	*Hoboken, N. J.*	1874
NEWCOMB, SIMON, U. S. N	*1620 P st. NW., Washington, D. C.*	1869
PACKARD, A. S	*Providence, R. I.*	1872
PEIRCE, CHARLES S	*Milford, Pa.*	1876
PICKERING, EDWARD C	*Cambridge, Mass.*	1873
POWELL, JOHN W	*Washington, D. C.*	1880
PUMPELLY, RAPHAEL	*Gibbs ave., Newport, R. I.*	1872
PUTNAM, FREDERICK W	*Cambridge, Mass.*	1885
REMSEN, IRA	*Johns Hopkins University, Baltimore, Md.*	1882
ROGERS, FAIRMAN	*Abroad.*	—
ROOD, OGDEN N	*New York City.*	1865
ROWLAND, HENRY A	*Johns Hopkins University, Baltimore, Md.*	1881
SARGENT, CHARLES S	*Jamaica Plain, Mass.*	1895
SCHOTT, CHARLES A	*212 First st. SE., Washington, D. C.*	1872
SCUDDER, SAMUEL H	*Cambridge, Mass.*	1877
SELLERS, WILLIAM	*1600 Hamilton st., Philadelphia, Pa.*	1873
SMITH, SIDNEY I	*New Haven, Conn.*	1884
TROWBRIDGE, JOHN	*Cambridge, Mass.*	1878
VERRILL, A. E	*New Haven, Conn.*	1872
WALCOTT, CHARLES D	*Washington, D. C.*	1896
WELCH, WILLIAM H	*935 St. Paul st., Baltimore, Md.*	1895
WHITE, CHARLES A	*Washington, D. C.*	1889
WHITMAN, CHARLES O	*Hyde Park Station, Chicago, Ill.*	1895
WOOD, HORATIO C	*1925 Chestnut st., Philadelphia, Pa.*	1879
WOODWARD, ROBERT S	*183 Claremont ave., Montclair, N. J.*	1896
WRIGHT, ARTHUR W	*New Haven, Conn.*	1881
YOUNG, CHARLES A	*Princeton, N. J.*	1872

DECEASED MEMBERS.

	Date of death.
*AGASSIZ, LOUIS	Dec. 14, 1873
*ALEXANDER, J. H	Mar. 2, 1867
*ALEXANDER, STEPHEN	June 25, 1883

* Biographical notices have been presented of those designated by an asterisk.

	Date of death.
*BACHE, ALEXANDER DALLAS	Feb. 14, 1867
*BAIRD, SPENCER F	Aug. 19, 1887
BARNARD, F. A. P	Apr. 27, 1889
BARNARD, J. G	May 14, 1882
BARTLETT, W. H. C	Feb. 11, 1893
*BROWN-SEQUARD, CHARLES E	Apr. 2, 1894
*CASEY, THOMAS L., U. S. A	Mar. 25, 1896
*CASWELL, ALEXIS	Jan. 8, 1887
*CHAUVENET, WILLIAM	Dec. 13, 1870
*CLARK, HENRY JAMES	July 1, 1873
*COFFIN, JAMES H	Jan. 6, 1873
COFFIN, J. H. C	Jan. 8, 1890
*COOK, GEORGE H	Sept. 22, 1889
COOKE, JOSIAH P	Sept. 3, 1894
*COPE, EDWARD D	Apr. 12, 1897
DALTON, J. C	Feb. 2, 1889
DANA, JAMES D	Apr. 14, 1895
*DAVIS, CHARLES H	Feb. 18, 1877
*DRAPER, HENRY	Nov. 20, 1882
*DRAPER, JOHN W	Jan. 4, 1882
*EADS, JAMES B	Mar. 8, 1887
*ENGELMANN, GEORGE	Feb. 4, 1884
*FERREL, WILLIAM	Sept. 18, 1891
*FRAZER, JOHN FRIES	Oct. 12, 1872
*GABB, WILLIAM M	May 30, 1878
GENTH, F. A	Feb. 2, 1893
*GILLISS, JAMES MELVILLE	Feb. 9, 1865
*GOODE, G. BROWN	Sept. 6, 1896
*GOULD, AUGUSTUS A	Sept. 15, 1866
GOULD, BENJAMIN A	Nov. 27, 1896
*GRAY, ASA	Jan. 30, 1888
*GUYOT, ARNOLD	Feb. 8, 1884
*HADLEY, JAMES	Aug. 1, 1864
*HALDEMAN, S. S	Sept. 20, 1880
HALL, JAMES	Aug. 8, 1898
*HAYDEN, F. V	Dec. 22, 1887
*HENRY, JOSEPH	May 13, 1878
*HILGARD, JULIUS E	May 8, 1891
*HITCHCOCK, EDWARD	Feb. 27, 1864
*HOLBROOK, J. E	Sept. 8, 1871
*HUBBARD, J. S	Aug. 16, 1863
*HUMPHREYS, A. A	Nov. 28, 1883
HUNT, T. STERRY	Feb. 12, 1892
*KIRKLAND, JARED P	Dec. 10, 1877
*LANE, J. HOMER	May 3, 1880
*LE CONTE, JOHN	Apr. 29, 1891
*LE CONTE, JOHN L	Nov. 15, 1883
LEA, MATTHEW C	Mar. 15, 1897
LEIDY, JOSEPH	Apr. 30, 1891
*LESQUEREUX, LEO	Oct. 25, 1889
LONGSTRETH, MIERS F	Dec. 27, 1891
*LOOMIS, ELIAS	Aug. 16, 1889
LOVERING, JOSEPH	Jan. 18, 1892
LYMAN, THEODORE	Sept. 10, 1897

* Biographical notices have been presented of those designated by an asterisk.

	Date of death.
*MAHAN, D. H	Sept. 16, 1871
*MARSH, G. P	July 23, 1882
MAYER, ALFRED M	July 13, 1897
*MEEK, F. B.	Dec. 21, 1877
*MEIGS, M. C	Jan. 2, 1892
*MORGAN, LEWIS H	Dec. 14, 1881
NEWBERRY, J. S.	Dec. 7, 1892
*NEWTON, H. A.	Aug. 1, 1896
NEWTON, JOHN	May 1, 1895
*NORTON, WILLIAM A	Sept. 21, 1883
*OLIVER, JAMES E.	Mar. 27, 1895
PETERS, C. H. F	July 18, 1890
*POURTALES, L. F	July 19, 1880
RODGERS, JOHN	May 5, 1882
ROGERS, ROBERT E	Sept. 7, 1884
ROGERS, WM. A	Mar. 1, 1898
*ROGERS, WILLIAM B.	May 30, 1882
*RUTHERFURD, LEWIS M	May 30, 1892
*SAXTON, JOSEPH	Oct. 26, 1873
*SILLIMAN, BENJ., Sr.	Nov. 24, 1864
SILLIMAN, BENJ., Jr.	Jan. 14, 1885
*SMITH, J. LAWRENCE	Oct. 12, 1883
*STIMPSON, WILLIAM	May 26, 1873
*STRONG, THEODORE	Feb. 1, 1869
*SULLIVANT, W. S.	Apr. 30, 1873
*TORREY, JOHN	Mar. 10, 1873
*TOTTEN, J. G.	Apr. 22, 1864
*TROWBRIDGE, WILLIAM P	Aug. 12, 1892
TRUMBULL, JAMES H	Aug. 5, 1897
*TUCKERMAN, EDWARD	Mar. 15, 1886
WALKER, FRANCIS A	Jan. 5, 1897
*WARREN, G. K	Aug. 8, 1882
*WATSON, JAMES C	Nov. 23, 1880
*WATSON, SERENO	Mar. 9, 1892
*WINLOCK, JOSEPH	June 11, 1875
*WOODWARD, J. J., U. S. A	Aug. 17, 1884
*WORTHEN, A. H	May 6, 1888
*WYMAN, JEFFRIES	Sept. 4, 1874

FOREIGN ASSOCIATES.

AUWERS, ARTHUR	*Berlin.*
BAEYER, ADOLPH (RITTER VON)	*Munich.*
BERTHELOT, M. P. E	*Paris.*
BERTRAND, J. L. F	*Paris.*
BUNSEN, ROBERT W	*Heidelberg.*
GEGENBAUR, KARL	*Heidelberg.*
GILL, DAVID	*Cape Town.*
HOOKER, Sir J. D.	*Kew.*
KELVIN (Lord)	*Glasgow.*
KLEIN, FELIX	*Göttingen.*
KÖLLIKER, ALBERT VON	*Würzburg.*
LACAZE-DUTHIERS, HENRI DE	*Paris.*

* Biographical notices have been presented of those designated by an asterisk.

LIE, SOPHUS ..... *Leipzig.*
LISTER (Lord) ..... *London.*
MOISSAN, HENRI ..... *Paris.*
POINCARÉ, HENRI ..... *Paris.*
RAYLEIGH (Lord) ..... *London.*
RAMMELSBERG, K. F. ..... *Berlin.*
RICHTHOFEN, F. VON ..... *Berlin.*
STOKES, Sir GEORGE G ..... *Cambridge.*
STRASBURGER, EDOUARD ..... *Bonn.*
STRUVE, OTTO VON ..... *Pulkowa.*
SUESS, EDOUARD ..... *Vienna.*
VIRCHOW, RUDOLPH VON ..... *Berlin.*
ZITTEL, KARL ALFRED (RITTER VON) ..... *Munich*

DECEASED FOREIGN ASSOCIATES.

SIR WM. ROWAN HAMILTON.
KARL ERNST VON BAER.
HENRY MILNE-EDWARDS.
MICHAEL FARADAY.
L. ELIE DE BEAUMONT.
SIR DAVID BREWSTER.
G. A. A. PLANA.
F. W. A. ARGELANDER.
FRIEDRICH WÖHLER.
J. B. DUMAS.
J. B. J. D. BOUSSINGAULT.
M. E. CHEVREUL.
MICHEL CHASLES.
SIR GEORGE B. AIRY.
J. C. ADAMS.
SIR RICHARD OWEN.
C. H. C. BURMEISTER.
ARTHUR CAYLEY.
T. H. HUXLEY.
HUGO GYLDÉN.
F. F. TISSERAND.
JULIUS VON SACHS.
SIR RODERICK I. MURCHISON.
VICTOR REGNAULT.
H. W. DOVE.
C. A. F. PETERS.
JUSTUS VON LIEBIG.
ALEXANDER BRAUN.
JOACHIM BARRANDE.
ADOLPHE WÜRTZ.
THEODORE VON OPPOLZER.
G. R. KIRCHOFF.
RUDOLPH CLAUSIUS.
JAMES P. JOULE.
CARLOS IBAÑEZ.
JEAN SERVAIS STAS.
ALPHONSE DE CANDOLLE.
A. W. HOFMANN.
BARON H. VON HELMHOLTZ.
K. F. W. LUDWIG.
LOUIS PASTEUR.
AUGUST KEKULÉ.
EMIL DU BOIS REYMOND.
J. J. SYLVESTER.
KARL WEIERSTRASS.

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S. Doc. 56——3

55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 57.

TEMPORARY FORCE, OFFICE OF THE AUDITOR FOR THE WAR DEPARTMENT.

LETTER

FROM

THE ACTING SECRETARY OF THE TREASURY,

TRANSMITTING

COPY OF A COMMUNICATION FROM THE AUDITOR FOR THE WAR DEPARTMENT, SUBMITTING A CLAUSE OF APPROPRIATION IN THE SUM OF $25,000 FOR THE EMPLOYMENT OF A TEMPORARY FORCE FOR SERVICE IN THE EXAMINATION AND AUDITING OF THE ACCOUNTS OF REVENUE TO BE COLLECTED BY THE MILITARY AUTHORITIES.

JANUARY 11, 1899.—Referred to the Committee on Appropriations and ordered to be printed.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, D. C., January 10, 1899.

SIR: I have the honor to transmit herewith, for the consideration of Congress, copy of a communication from the Auditor of the War Department of the 7th instant, submitting a clause of appropriation in the sum of $25,000 for the employment of a temporary force for service in his office in the examination and auditing of the accounts of revenue to be collected by the military authorities as directed by the President in his proclamation of December 9, 1898.

Respectfully, yours,

O. L. SPAULDING,
Acting Secretary.

The PRESIDENT OF THE SENATE.

TREASURY DEPARTMENT,
OFFICE OF AUDITOR FOR THE WAR DEPARTMENT,
Washington, D. C., January 7, 1899.

SIR: I have the honor to recommend that an appropriation of $25,000 be requested for the employment of a temporary force for service in this office in the examination and auditing of the accounts of revenue

to be collected by the military authorities as directed by the President in his proclamation of December 9, 1898, and I would suggest an amendment to the legislative, executive, and judicial bill, in terms as follows:

For the temporary employment of such additional clerks and messengers as in the judgment of the Secretary of the Treasury may be required in the office of the Auditor for the War Department for the prompt and efficient examination and auditing of the accounts of revenue collected and disbursed by the military authorities in the West Indies, Philippines, and other islands evacuated by Spain and occupied by the United States forces, twenty-five thousand dollars, to be available from and after April first, eighteen hundred and ninety-nine: *Provided*, That the Secretary of the Treasury shall, on the first Monday in January, nineteen hundred, report to Congress the number of persons employed and the amount paid to each under this appropriation.

The reason for an appropriation in the form suggested is that the number of employees required or the nature of the work can not at present be ascertained with any degree of certainty. The work will, at the beginning, evidently not require as many employees as when the military revenue system is in complete working order, and when extended possiby to all the islands evacuated.

As these moneys are to be collected and expended under the war power, and not under all the safeguards of legislative enactment, it seems very essential that the accounts should be promptly audited in order that any defects or errors may be called to the attention of the authorities, and the only practical way that occurs to me for the accomplishment of this purpose is to provide an appropriation to be expended in the discretion of the Secretary of the Treasury.

I would also call attention to the fact that for the increased force required for this and other work incident to the war with Spain, further space is required than is afforded by the buildings provided for the use of this office.

Respectfully, yours, W. W. BROWN,
Auditor.

The SECRETARY OF THE TREASURY.

[Tariff circular No. 22.]

WAR DEPARTMENT, *Washington, December 13, 1898.*

The following order of the President is published for the information and guidance of all concerned:

EXECUTIVE MANSION, *December 9, 1898.*

By virtue of the authority vested in me as Commander in Chief of the Army and Navy of the United States, I hereby order and direct that during the occupancy by the military authorities of the United States of the island of Cuba and all islands in the West Indies west of the seventy-fourth degree, west longitude, evacuated by Spain, said islands shall constitute a collection district for customs purposes. Havana shall be the chief port of entry. An officer of the Army shall be assigned to such port, who shall be the collector of customs of the islands and of the chief port, and shall have general jurisdiction over the collection of customs in the islands.

The ports Matanzas, Cardenas, Cienfuegos, Sagua, Caibarien, Santiago, Manzanillo, Nuevitas, Guantanamo, Gibara, and Baracoa in said islands are hereby declared to be subports of entry, and an officer of the Army will be assigned to each of the subports, who will be the collector of customs of a subport and shall have general jurisdiction of the collection of customs at such port. He shall make weekly reports to the collector of customs of the islands at the chief port of all transactions at the subport over which he has jurisdiction, with copies of all entries of merchandise, duly certified.

The Secretary of War shall appoint such civilian deputy collectors, inspectors, and other employees as may be found necessary.

The collectors of the subports shall deposit all moneys collected by them with the

collector of the islands, and a receipt from the collector of the islands must be taken in duplicate for all such deposits.

There shall be appointed an auditor, who shall be stationed at the chief port, whose duty it shall be to examine all entries of merchandise and if found correct to certify to them. Such auditor shall on the first of each month make a full and complete report, duly certified, to the Secretary of War of all duties collected at each port, with an itemized report of all expenditures made therefrom, which shall be referred to the Auditor for the War Department for audit.

All questions arising in the administration of customs in the islands shall be referred to the collector of the islands at the chief port for decision, from which there shall be no appeal, except in such cases as may be referred by the collector of the islands to the Secretary of War for his decision.

WILLIAM MCKINLEY.

Upon receipt of this order by the officer in command of the United States forces at any port or place in the island of Cuba, or any island in the West Indies west of the seventy-fourth degree, west longitude, evacuated by Spain, in possession of the United States, said order will be proclaimed and enforced.

G. D. MEIKLEJOHN,
Acting Secretary of War.

55TH CONGRESS, 3d Session. | SENATE. | DOCUMENT No. 58.

MEMORIAL FROM THE NATIONAL BOARD OF TRADE.

JANUARY 11, 1899.—Referred to the Committee on Foreign Relations and ordered to be printed

The VICE-PRESIDENT presented the following

MEMORIAL FROM THE NATIONAL BOARD OF TRADE RELATIVE TO THE EXEMPTION OF PRIVATE PROPERTY FROM CAPTURE ON THE SEA DURING WAR.

NATIONAL BOARD OF TRADE,
SECRETARY'S OFFICE,
Philadelphia, January 10, 1899.

DEAR SIR: In accordance with instructions, I hand you herewith resolutions of the National Board of Trade relative to the exemption of private property from capture on the sea during war, to which I invite your attention.

Yours, truly,

W. R. TUCKER, *Secretary.*

Hon. GARRETT A. HOBART,
President of the Senate, Washington, D. C.

NATIONAL BOARD OF TRADE,
SECRETARY'S OFFICE,
Philadelphia, January —, 1899.

[Extract from the minutes of the twenty-ninth annual meeting of the National Board of Trade, held in Washington, D. C., December 13-15, 1898.]

X.—EXEMPTION OF PRIVATE PROPERTY FROM CAPTURE ON THE SEA DURING WAR.

Resolved, That the National Board of Trade views with favor the recommendation made by the President of the United States, in his annual message of December 5, 1898, in regard to the exemption of private property on the sea from capture during war; and further

Resolved, That this association urges the adoption of such resolutions by the Senate and the House of Representatives of the United States as shall best tend to the final attainment of the most beneficent reforms in the rules of maritime warfare.

Further resolved, That copies of this resolution, properly attested, be transmitted by the secretary to the President of the United States and the presiding officers of both Houses of Congress.

The resolutions were adopted.

W. R. TUCKER, *Secretary.*

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55th CONGRESS
3d Session
1898-99
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